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CONTRIBUTIONS FROM THE GRAY HERBARIUM  
OF HARVARD UNIVERSITY.

NEW SERIES. — No. XXXVI.

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CONTRIBUTIONS FROM THE GRAY HERBARIUM OF HARVARD  
UNIVERSITY.—NEW SERIES, No. XXXVI.

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I. SYNOPSIS OF THE MEXICAN AND CENTRAL AMERICAN  
SPECIES OF CASTILLEJA.

By ALICE EASTWOOD.

THE genus *Castilleja* was published by Linnaeus fil. in 1771 (Suppl. 293). It was named by Mutis in honor of Domingo Castillejo of the botanical garden of Cadiz and rested upon the two species collected by Mutis in New Granada, *C. integrifolia* and *C. fissifolia*. At that time *C. pallida* and *C. coccinea* had been described by Linnaeus but under *Bartsia*, so that altogether four species were known. In 1818 Nuttall established the genus *Euchroma* (Gen. ii. 55) founded upon *Bartsia coccinea* and *B. sessiliflora* Pursh. The first satisfactory arrangement, however, came in 1846, when Bentham revised the genus *Castilleja* (DC. Prodr. x. 528-534), establishing four sections. At that time thirty-four species were known, fifteen of which belonged to Mexico and Central America. The subdivisions established by Bentham seem to mark off natural groups, which, however, show connecting characteristics that often render the true position of certain species doubtful. *Epichroma* is probably the most individual subdivision and has, perhaps, the best claim to generic rank; but some species placed in the present synopsis under *Euchroma* have floral characteristics that closely approach those of *Epichroma*, while other species under the same section are difficult to separate from *Hemichroma*. On account of this inter-relationship any key must be more or less artificial. Perhaps when the knowledge gained from books and herbarium specimens is supplemented by that of the living plants in their natural environment, an entirely different system of classification may be arranged. Dried specimens often conceal the form of the flower, and when mounted frequently render dissection difficult, so that it is not always possible to obtain accurate knowledge of all of the parts; especially is this true of the lower lip of the corolla, which gives much of the characteristic

form. Great variation and closely related species indicate a recent genus still in process of evolution. The line separating *Orthocarpus* from *Castilleja* is not definitely fixed, and the species on the border may suffer changes in name frequently. At present the tendency is to remove all these doubtful species from *Orthocarpus* and include them in *Castilleja*, thus leaving the former genus represented only by annuals. The two genera are certainly very closely related, for there is scarcely a character of *Orthocarpus* which cannot be found in some species of *Castilleja*. Indeed, it is doubtful if the differences between the two genera are much more pronounced than are the differences between some of the sections of *Castilleja*. The last enumeration of the Mexican and Central-American species of *Castilleja* was in 1881-1882, when Hemsley enumerated 26 species (Biol. Cent.-Am. Bot. ii. 459-463). Since then great activity has prevailed in the biological exploration of Mexico and Central America, and specimens of *Castilleja* have been accumulating in all the large herbaria. The present paper is based upon the specimens in the Gray Herbarium and some from the herbarium of the U. S. National Museum. Besides the key a short diagnosis of each species has been added, sometimes modified from the original description and sometimes quoted.

#### SECTIO I. EPICHROMA Benth. in DC. Prodr. x. 528 (1846).

Calyx vix fissus, breviter et obtuse sinuato-lobatus. Folia pinnatisecta; rhachi et laciniis filiformibus vel anguste linearibus. Folia floralia caulinis minora et concolora. Flores laxi spicati vel racemosi. Annua.

Flores 2.5 cm. longi. Calyx coccineus infundibuliformis. Galea flava a basi exserta. . . . . 1. *C. tenuifolia*.  
 Flores 2 cm. longi. Calyx flavus. Galea flava exserta. . . . . 2. *C. aurea*.  
 Flores 1.5 cm. longi. Calyx viridi-purpureus. Galea viridi-flava paulo exserta. . . . . 3. *C. gracilis*.

#### SECTIO II. EUCHROMA (Nutt.) Benth. l. c. 529. *Euchroma* Nutt. Gen. ii. 54 (1818).

Calyx in duas partes subaequaliter fissus, segmentis integris vel obtuse bilobatis vel acute bifidis. Folia floralia caulinis latiora, apice dilatata et semper colorata. Flores et bracteae in spicis confertae, demum interruptae.

- a. *Annua vel biennis, radice brevi, b.*  
 b. *Caules recti solitarii vel pauci 1-2 dm. alti. Stigma crassum, c.*  
 c. *Folia nunc integra nunc pinnatisecta. Bractee floribus breviores. Puberulens. Folia lanceolata. Stigma exsertum bisectum, partibus recurvatis. . . . . 4. C. macrostigma.*  
*Pilosa et glandulosa. Folia lanceolata. Stigma vix exsertum bilobatum. . . . . 5. C. pediaca.*  
*Albo-puberulens. Folia vulgo pinnatisecta, laciniis linearibus. Stigma globosum vix exsertum. . . . . 6. C. sphaerostigma.*  
 c. *Folia et caulinia et floralia integra.*  
*Glandulare puberulens. Folia lanceolata saepe undulata. Bractee obovatae flores excedentes. Stigma bilobatum exsertum. . . . . 7. C. Palmeri.*  
*Sublanata. Folia linearia. Bractee lanceolatae flores aequantes vel excedentes. Stigma bilobatum vix exsertum. . . . . 8. C. angustata.*  
*Glandulare pilosa. Folia oblonga vel lanceolata. Bractee spatulatae floribus breviores. Stigma bilobatum. Styli superior pars et galea exsertae. . . . . 9. C. ornata.*  
 b. *Caules a basi ramosi, infra ramulos squamulose tuberculati, c.*  
 e. *Folia oblanceolata basi angustata. Capsula apice truncata. Bractee paulo dilatatae. Stigma bilobatum vix exsertum. . . . . 10. C. communis.*  
*Bractee dilatatae. Stigma bilobatum exsertum. Flores foliaque eis praecedentis majora. . . . . 11. C. argensis.*  
 e. *Folia lineari-lanceolata basi dilatata. Capsula apice acuminata. . . . . 12. C. nitricola.*  
 a. *Perennis nana saepe caespitosa. Alpina vel subalpina. Folia integra vel pinnatisecta, f.*  
 f. *Caules recti, non caespitosi. Spici breves densique. Galea lata. Labium inferius exsertum. . . . . 13. C. saltensis.*  
 f. *Caules caespitosi. Galea exserta. Flores 3-3.8 cm. longi. . . . . 14. C. Pringlei.*  
*Flores 2.5 cm. longi. . . . . 15. C. Schaffneri.*  
*Galea vix exserta. Folia apice obtusa. Corolla et calyx subaequantur. . . . . 16. C. tolucensis.*  
*Folia acuta. Corolla calycem vix superans. . . . . 17. C. moranensis.*  
 a. *Perennis. Caules alti saepissime recti. Bractee latae coloratae, g.*  
 g. *Calycis segmenta integra. Folia integra valde nervata, inferiora basi angustata. . . . . 18. C. nervata.*  
*Folia integra vel saepissime pinnatisecta. Calyx viridis 1.2-2 cm. longus. . . . . 19. C. Conzattii.*  
*Calyx viridis apice coccineus 2.3 cm. longus. . . . . 20. C. rigida.*  
*Calyx subfalcatus apice coccineus 3-3.2 cm. longus, segmentis vix dilatatis. . . . . 21. C. falcata.*  
*Calyx divaricatus, usque ad ovarium coccineus; segmentis dilatatis. . . . . 22. C. hirsuta.*

- g. Calycis segmenta apice emarginata vel obtuse bilobata, h.  
 h. Folia basi dilatata.  
     Folia bracteis longiora.  
     Pilosa. Corollae labium inferius quinquedentatum. 23. *C. scorzoneriifolia*.  
     Pilosa et glandulosa. Corollae labium inferius tridentatum, sinu-  
     bus latis involutis. . . . . 24. *C. glandulosa*.  
     Folia superiora bracteis breviora. Scabrido-hispida. Folia ovata  
     valde nervata. . . . . 25. *C. crypiandra*.  
 h. Folia basi non dilatata, bracteis longiora.  
     Scabrido-hispida. Folia lanceolata valde nervata.  
     26. *C. lithospermoides*.  
     Glabrescens. Inflorescentia pilosa. Folia ovato-acuminata longa  
     lataque. . . . . 27. *C. Nelsoni*.  
     Lanata densissime. Folia lineari-lanceolata. . . . . 28. *C. lanata*.  
     Caulis in vetustate glabri. Folia lanata anguste longeque spatulata.  
     29. *C. guadalupensis*.  
 g. Calycis segmenta acute bilobata, i.  
 i. Folia integra.  
     Tomentosa. Folia lineari-lanceolata. . . . . 30. *C. integra*.  
     Scabrido-hispida et glandulari-pilosa. Folia valde nervata lanceolata.  
     31. *C. aspera*.  
 i. Folia saepissime pinnatisecta. Flores subfalcati. (Transitio ad Hemi-  
     chromam.)  
     Folia regulariter pectinata, laciniis brevibus subfiliformibus.  
     32. *C. ctenodonta*.  
     Folia filiformi-pinnatisecta. Corolla breviter exserta. Capsula  
     anguste et oblique cylindracea. . . . . 33. *C. Bryanti*.  
     Folia lanceolata saepe pinnatisecta. Corolla exserta 5-15 mm.  
     34. *C. affinis*.  
     Folia anguste linearia apice attenuata. Flores parvi pedicellati.  
     Capsula anguste cylindraceo-ovoideo. . . . . 35. *C. minor*.

### SECTIO III. CALlichroma Benth. l. c. 531 (1846).

Calyx postice breviter, antice profundius fissus, lobis bifidis, laciniis ovatis vel oblongis vel linearibus plerumque acutis vulgo coloratis. Folia floralia (praesertim superiora) caulinis saepius magis incisa, latiora et colorata.

Folia caulinea et floralia pinnatifida, lobis linearibus elongatis. Calycis segmenta linearia bifida. Corollae labii subaequales calycem multo superantes.  
 36. *C. mexicana*.

*C. sessiliflora* auct. quoad speciminibus mexicanis est me iudice ad *C. mexicanam* referenda.

## SECTIO IV. HEMICHROMA Benth. l. c. 532 (1846).

Calyx incurvus, antice profunde fissus, postice vix vel paulo fissus integer vel 2-4-dentatis. Folia floralia vulgo caulinis minora et apice vix colorata. Corolla e fissura calycis saepius longiuscule exserta.

## a. Flores spicati, b.

## b. Folia distincte auriculata, auriculis 1-2 mm. longis et latis, c.

## c. Pubescentia dense canescens et minute glandulosa, caulibus idem pilosis.

Folia deltoidea densissime imbricata. . . . . 37. *C. auriculata*.

Folia ovato-lanceolata non imbricata. . . . . 38. *C. longiflora*.

c. Pubescentia divaricate pilosa et scabrido-puberula. Folia viridia lanceolata. Flores subrecti. . . . . 39. *C. subalpina*.

## c. Pubescentia plerumque adpressis et scabrido-puberula. Flores divaricati.

Folia lineari-lanceolata saepe 5 cm. longa divaricata, in siccitate atra.

40. *C. tenuiflora*.

Folia eis praecedentis breviora et crassiora. Pubescentia densior.

41. *C. canescens*.

## b. Folia obscure auriculata.

Folia lineari-lanceolata viridia, divaricate pilosa. . . . . 42. *C. xylorrhiza*.

Folia linearia viridia scabridula. . . . . 43. *C. scabridula*.

## b. Folia basi non dilatata.

Folia lineari-lanceolata saepe deflexa, canescente pubescentia. Flores multo exserti divaricati. . . . . 44. *C. laxa*.

Folia subfiliformia in siccitate atra. Flores recti. . . . . 45. *C. stenophylla*.

## a. Flores racemosi, c.

## c. Folia integra.

Bracteae summae obovatae apice fimbriatae. . . . . 46. *C. longibracteata*.

Bracteae summae lineares. . . . . 47. *C. integrifolia*.

## c. Folia pinnatisecta, laciniis elongatis.

Folia scabrido-hispidula tenuia, laciniis linearibus plurimis.

48. *C. patriotica*.

Folia hispida, superiora trifida, lobo medio lateralibus multo longiori.

49. *C. Purpusi*.

Folia pectinato-laciniata, laciniis linearibus distantibus 2-3-jugis.

50. *C. pectinata*.

## c. Folia pinnatisecta, laciniis crassis obtusis, saepissime in siccitate atris.

Folia pubescens, laciniis brevibus. . . . . 51. *C. fissifolia*.

Folia glabra. . . . . 52. *C. irasuensis*.

*C. linearifolia* Benth., Sonora, *Geo. Thurber*, no. 981, species hujus sectionis sed valde dubia est.

Locus in clave dubius . . . . . { 53. *C. tapeinclada*.  
54. *C. katakypusa*.

1. *C. TENUIFOLIA* Mart. & Gal., herbacea glabra vel puberula 1.5-6 dm. alta ramosa; foliis pinnatisectis, segmentis filiformibus vel lineari-subulatis elongatis in siccitate contortis, floralibus simplicioribus

et minoribus; spicis vel racemis gracilibus; floribus divaricatis ca. 2-3 cm. longis; calyce tubuloso vel saepissime infundibuliformi 1.5-2.5 cm. longo; galea 5-10 mm. exserta obtusa inferiore labio protuberanti nunc exserto nunc incluso; styli superiore parte et stigmatibus bilamellato exsertis; capsula oblonga 7 mm. longa apice truncata. — Mart. & Gal. in Bull. Acad. Brux. xii. pt. 2, 30 (1845); Walp. Rep. vi. 651; Hemsl. Biol. Cent.-Am. Bot. ii. 463; Loesen. in Bull. Herb. Boiss. ser. 2, iii. 285. *C. anthemidifolia* Benth. in DC. Prodr. x. 528 (1846). — Southern Mexico in the states of Oaxaca, Michoacan, Guerrero, Morelos. The type was collected in Oaxaca, Galeotti, no. 995. OAXACA: Zimatlan, Sta. Ines del Monte, altitude 2800 m., C. Conzatti, no. 1358; Sierra de Clavellinas, altitude 2440 m., C. G. Pringle, no. 5692. MICHOACAN: Ignacio, C. & E. Selser, no. 1209; dry hills near Patzcuaro, C. G. Pringle, no. 3348; rock fields near Coru Station, altitude 1830 m., C. G. Pringle, no. 13,142. GUERRERO: between Tlapa and Ayusinapa, altitude 1372-1740 m., E. W. Nelson, no. 2106. MORELOS: thin soil of the knobs of the Sierra de Tepoxtlán, altitude 2287 m., C. G. Pringle, no. 9123.

2. *C. AUREA* Robinson & Greenman, glabra supra puberula 3 dm. alta graciliter ramosa; laciniis pinnatisectis 2.5-4 cm. longis; laciniis 6-9 lineari-filiformibus; floribus 2-2.5 cm. longis subsecundis in racemis, pedicellis 2-10 mm. longis rectis, saepe in fructu divaricatis; galea obtusa exserta 8 mm.; labio inferiore saepissime exserto; capsula oblongo-acuminata ca. 6 mm. longa. — Proc. Am. Acad. xxxii. 39 (1896). — MORELOS: wet bluffs of barrancas above Cuernavaca, altitude 2135 m., C. G. Pringle, no. 6204 (type, in hb. Gray).

3. *C. GRACILIS* Benth., praecedenti similis; floribus 10-15 mm. longis, saepe sessilibus; galea obtusa 4-6 mm. exserta, calyce non ampliato et viridi-flavo. — Benth. in DC. Prodr. x. 528 (1846); Hemsl. l. c. 460. — OAXACA: Cerro de San Felipe, altitude 1800 m., Conzatti & González, no. 490; dry banks in same mountain range, altitude 2287 m., C. G. Pringle, no. 4968. FEDERAL DISTRICT: lava fields, valley of Mexico, altitude 2287 m., C. G. Pringle, no. 7977. These specimens have not been compared with authenticated ones.

4. *C. MACROSTIGMA* Robinson, caule basi ramoso et saepe cum ramulis gracilibus brevibus sterilibus in axillis, puberulenti 1-2 dm. alto; foliis viridibus, inferioribus subimbricatis, superioribus integris undulatis vel sparse pinnatisectis lineari-lanceolatis 1-4 cm. longis 2-3 mm. latis 1-5 nerviis; floribus flavis 1.5-2 cm. longis; spicis brevibus demum elongatis; calyce fesso 4-5 mm., segmentis bidentatis; corollae galea obtusa; labio inferiore non protuberanti, laciniis lineari-acuminatis 1-5 cm. longis, media brevior; stigmatibus exsertis, 1-2 mm. longis,



recurvatis; capsula elliptica acuta compressa 8 mm. longa. — Proc. Am. Acad. xxvi. 173 (1891). — STATE OF MEXICO: grassy slopes, Flor de Maria, 28 July, 1890, *C. G. Pringle*, no. 3194 (type, in hb. Gray), also from same locality, altitude 2440 m., no. 9429. To this species, at the time of its original description, was doubtfully referred a specimen collected in Chihuahua by *C. G. Pringle*, no. 1545, which is below made the type of *C. pediaca*. In hb. U. S. Nat. Mus. sheet no. 396,150 contains a specimen of *C. macrostigma* collected at the type locality by *Rose & Hay*, no. 6330, together with a specimen of *C. Schaffneri*.

5. *C. pediaca*, n. sp., annua albo-pilosa et glandulare puberulens; caulibus prope basim recte ramosis, 2 dm. altis; foliis tenuibus lanceolato-acuminatis integris 3-5-nerviis, 2-3 cm. longis 1-2 mm. latis, basi amplexicaulibus 5-10 mm. latis; floribus sessilibus interruptis acclinibus ad axim spicae gracilis; bracteis flores subaequantibus et investientibus, spatulatis 10-12 mm. longis, superiore parte flavo densissime glandulare puberulenti, apice truncato vel obtuso, inferiore parte pilosa nervia; calyce membranacea 12 mm. longo, fisso 6 mm., duobus partibus truncatis vel emarginatis 5 mm. latis; corolla recta 18 mm. longa, galea acuminata apice glandulare pilosa, labio inferiore membranaceo non protuberanti, laciniis linearibus obtusis glandulare ciliatis 1.5 mm. longis, sinibus inter laciniis 1 mm. latis; stigmatate bilobo crasso, fere exserto; ovario subcylindrico; capsula compressa oblonga 8 mm. longa 3 mm. diametro, apice acuminata; seminibus rhomboideis 1 mm. diametro, testa membranacea profunde foveolata. — CHIHUAHUA: plains, base of the Sierra Madre, 27 September, 1887, *C. G. Pringle*, no. 1545 (type, in hb. Gray), distributed as *C. lithospermoides*, var. (?) *flava* Watson; also included under *C. macrostigma* Robinson in Proc. Amer. Acad. xxvi. 173 (1891). From this latter species it differs in having a more closely flowered spike, pilose instead of puberulent indumentum and less exserted stigma. The flowers too are dissimilar, but the differences are not so obvious. It is even further removed from *C. lithospermoides*, being a slender-stemmed annual, while that is a robust perennial with somewhat harsh pubescence. The slender spikes of *C. pediaca* have flowers about 1 cm. apart, somewhat distichous and appressed to an axis that is slightly tortuous, and are quite unlike the showy thickly flowered spikes of *C. lithospermoides*.

6. *C. sphaerostigma*, n. sp., caulibus 1-2 simplicibus 1.5-2.5 dm. altis gracilibus adpressi-pubescentibus; foliis integris vel pinnatisectis 1-3-nerviis puberulenti-subscabridis, basi amplexicaulibus, apice obtusis, margine frequente involutis, laciniis 2-6 anguste linearibus; floribus in spicis elongantibus sessilibus, bracteis galeam fere aequantibus vel (sub floribus primis) eam superantibus simplicibus cum margine undulata

vel 2-3-lobatis pruinosis; calycis segmentis 1 cm. longis 3 mm. latis emarginatis pruinosis tubum aequantibus; galea apice acuta 1 cm. longa purpurea glandulare puberulenti; labio inferiore membranaceo, laciniis linearibus acutis 2 mm. longis; stylo crasso; stigmatе globoso 1.25 mm. diametro vix exserto; capsula elliptica acuta compressa. — DURANGO: Otinapa, July-August, 1906, *E. Palmer*, no. 361 (type, in hb. Gray). The peculiar pruinose appearance of the inflorescence is due to the white puberulence closely covering the purplish bracts and flowers.

7. *C. Palmeri*, n. sp., sparse pilosa et glandulari-puberulens; caulibus 1-2 simplicibus rectis 1.5 dm. altis; foliis radicalibus imbricatis caulinis lanceolatis 2-3 cm. longis 1-3 mm. latis trinerviis, basi amplexicaulibus 5-10 mm. latis, apice obtusis vel acutis, margine integris vel undulatis; spicis flavis brevibus compactis, fructiferis elongatis; bracteis flores sessiles superantibus vel aequantibus spatulatis 2-3 cm. longis integris, apice rotundatis; calyce fisso 7 mm., laciniis emarginatis 5 mm. latis; corolla 14 mm. longa, galea acuta, dorso glandulari-puberulenti, calycem superanti; labio inferiore membranaceo protuberanti, lobis subulatis acuminatis 2 mm. longis glandulari-ciliatis; stigmatе bilobato crasso paulo exserto; capsula ovato-acuminata compressa; seminibus foveolatis cum testa membranacea. — DURANGO: Otinapa, July-August, 1906, *E. Palmer*, no. 376 (type, in hb. Gray). This species is related to *C. macrostigma*, differing in pubescence, densely flowered spike, and large bracts; from *C. angustata* it differs in pubescence, stigma, foliage, and flowers. There are resemblances to *C. glandulosa* chiefly in the form of the spike, but the bracts in *C. Palmeri* are rounded at apex rather than rhomboid. The corolla is quite dissimilar, the lower lip with three long almost equal divisions, and the body extending outward like a shelf, being very different from the trisaccate lower lip of *C. glandulosa* with its short divisions separated by the folds forming the sacs.

8. *C. angustata* (Robinson & Seaton), n. comb., caulibus 1-2 rectis gracilibus purpurascensibus 1-1.5 dm. altis, basi squamulosis, inferiore parte minute adpresso-pubescenti, superiore parte spicisque albotomentosis; foliis integris linearibus 2-4 cm. longis 1-3 mm. latis; bracteis lanceolatis acutis flores subaequantibus, supra viridibus glabrescentibus, subter albotomentosis, confertis cum floribus in spicis brevibus; calycis segmentis bidentatis vel crenatis albo-puberulentibus; corollae galea calycem paulo superanti, apice acuta, dorso glandulari-puberulenti; labio inferiore non protuberanti, laciniis 3 lineari-obtusis ciliatis 1.25 mm. longis, sinubus angustis; stigmatе crasso bilobato, paulo exserto; capsula ovato-oblonga acuta 5-7 mm. longa. — *C. pallida* Kunth, var. † *angustata* Robinson & Seaton in Proc. Am. Acad. xviii. 114 (1893). MICHOCAN: grassy slopes near Patzcuaro, 18 July, 1892,



*C. G. Pringle*, no. 4117 (type, in hb. Gray).—This is well distinguished in the group in which it has been placed by the almost lanate pubescence. Often at the base of the stem there is a peculiar thickening due to the old crowded leaf-bases. The leaves are probably present during the wet season.

9. *C. ornata*, n. sp., caulibus 1-2 rectis simplicibus 1.7-2.5 dm. altis glandulari-pilosis striatis; foliis lanceolatis vel oblongis, apice acutis vel obtusis, basi amplexicaulibus, margine integris vel crispis-undulatis, 2-3.5 cm. longis 2-6 mm. latis trinerviis; foliis radicalibus rosulatis, caulinis propinquis, supremis apice coccineis; floribus bracteisque confertis in spicis ornatis; bracteis spatulatis glandulari-puberulentibus, apice rotundatis vel rhomboideis 2-2.5 cm. longis 5-10 mm. latis calycem excedentibus; calyce fisso 1 cm., segmentis undulatis 5 mm. latis; galea exserta 5 mm., apice acuta, dorso viridi puberulenti, antice albo-membranacea; labio inferiore trisaccato membranaceo, laciniis subulati-acuminatis 2 mm. longis; stylo filiformi exserto, stigmatate crasso bilobato, in fructu galea stigmatateque contortis; capsula oblongo-ovata acuminata compressa 1 cm. longa. — CHIHUAHUA: near Colonia Juarez, Sierra Madre, June-July, 1899, *E. W. Nelson*, no. 6073 (type, in hb. Gray). This approaches more closely to *C. glandulosa* than any other species and resembles it in the trisaccate lower lip with the divisions separated by the folds forming the three sacs below. It has different pubescence and generally obtuse leaves. *C. glandulosa* does not appear ever to have the basal leaves rosulate, but their persistence in this species may be due to a season or locality of greater moisture.

10. *C. communis* Benth., pilosa et hispida ramosa alta; caulis inferiore parte squamulose tuberculata; foliis lanceolatis integris basi angustatis apice acutis vel obtusis; spicis elongatis basi interruptis; bracteis apice coloratis vix dilatatis flores parum aequantibus apice glandulosis viridibus; corolla non exserta; capsula lata obtusa siccitate nigra. — Benth. in DC. Prodr. x. 529; Hemsl. Biol. Cent.-Am. Bot. ii. 460; Schmidt in Mart. Fl. Bras. viii. pt. 1, 323, t. 56, fig. 2; Loesen. l. c. 285. — Southern Mexico, Central America to South America. — GUATEMALA: Alta Verapaz, *H. von Türckheim*, no. II. 1318, also Coban, no. 28; San Miguel Uspantan, *Heyde & Lux*, no. 2878 (both ex hb. John Donnell Smith). NICARAGUA: *Oersted*. COSTA RICA: San Jose, *Tonduz*, no. 7096; Cartago, *Juan J. Cooper*, no. 5873 (both ex hb. John Donnell Smith). YUCATAN: *G. F. Gaumer*, no. 416. VERA CRUZ: Santa Lucrecia, Isthmus Tehuantepec, *Chas. L. Smith*, no. 1102. TEPIC: San Blas, *Frank H. Lamb*, no. 608. Additional specimens in hb. U. S. Nat. Museum. — ORIZABA: Boca del Monte, *E. W. Nelson*, no. 204. This is mounted on sheet no. 257,518 with a specimen of *C. canescens*.

GUERRERO: between Tlapa and Tlaliscatilla, *E. W. Nelson*, no. 2048. JALISCO: vicinity of San Sebastian, *E. W. Nelson*, no. 4070.

11. *C. ARVENSIS* Schlecht. & Cham., precedenti similis, omnifarium major, bracteis obovatis dilatatis coloratis corollam superantibus. — *Linnaea*, v. 103 (1830); *Benth.* l. c. 529; *Mart. & Gal.* l. c. 31; *Hemsl.* l. c. 460; *Loesen.* l. c. 235. — ORIZABA: *Botteri*, nos. 339, 437. MICHOACAN: near Guanajuato, *C. & E. Seler*, no. 1148; corn fields near Patzcuaro, *C. G. Pringle*, no. 3349. AGUAS CALIENTES: *Hartweg*, no. 192. JALISCO: Guadalajara, *C. G. Pringle*, nos. 5348, 11,646; *E. Palmer*, no. 575, coll. of 1886. OAXACA: Sierra de San Felipe, altitude 3050 m., *C. G. Pringle*, no. 5664; same locality, altitude 2000 m., *Conzatti & González*, no. 507; Etlá, altitude 1600 m., *Lucius C. Smith*, no. 963. STATE OF MEXICO: Vallée de Mexico, *Schaffner*, no. 375; Atusco, *L. Hahn*, 1865–1866; Salto de Agua, *C. A. Purpus*, no. 1712. VERA CRUZ: Zacuapan and vicinity, dry meadows, *C. A. Purpus*, no. 1925; Cordoba, *Bourgeau*, no. 1893; same locality, altitude 850 m., *Conzatti & González*, no. 1135. S. W. CHIHUAHUA: *E. Palmer*, year 1885, number missing. MEXICO: without locality, *Bilimek*, no. 296; *Uhde*, no. 945.

12. *C. nitricola*, n. sp., herbacea; caule basi ramoso piloso 2 dm. alto; foliis lineari-oblongis apice obtusis basi amplexicaulibus, integris 3–4 cm. longis 2–5 mm. latis, investis pilis basi subpapillois; foliis superioribus et floralibus flores aequantibus vel floribus brevioribus ovatis vel spatulatis, apice obtusis glandulosis; floribus sessilibus in spicis angustis; calycis segmentis obtusis integris 6 mm. longis puberulente glandulosis; corolla calycem paulo superanti; galea acuta, dorso puberula exserta curvata, labium inferius duplo superanti, 7 mm. longo; labii laciniis membranaceis acuminatis 1.5 mm. longis; stigmatibus vix exserto capitato-emarginato; capsula ovato-acuminata. — SAN LUIS POTOSI: knolls of alkaline meadows, Hacienda de Angostura, 10 July, 1891, *C. G. Pringle*, no. 3756 (type, in hb. Gray). This was distributed as *C. scorzonerifolia*, "a narrow-bracted form." It seems quite distinct, peculiar in the group in the erect divisions of the lower lip which somewhat resemble those of *C. mexicana*. The plant has a pallid fleshy appearance like many of the *Chenopodiaceae*. The lower part of the stem is marked by bunches of leaf-scales resembling tubercles like those on *C. communis* and *C. arvensis*. The flowers are ochroleucous.

13. *C. saltensis*, n. sp., herbacea sparse arachnoidea 1 dm. alta; caulibus 2–4 simplicibus; foliis radicalibus subrosulatis linearilanceolatis 1–1.5 cm. longis; foliis caulinis pinnatisectis, laciniis 3–5 divaricatis linearibus, imis saepe tantum longis quantum mediis; bracteis coloratis similibus foliis superioribus, laciniis latioribus; flori-

bus purpureis sessilibus in spicis brevibus; calyce 18 mm. longo, fisso 7 mm., laciniis obtuse lobatis vel profunde emarginatis binerviis arachnoideo-pilosis et glandulosis; corollae galea et labio inferiore calycem superantibus, priori 8 mm. longa, basi 3-4 mm. lata, apice acuta, dorso glandulari-puberulenti, antice purpurea membranacea; labio inferiore viridi protuberanti tridentato, dentibus obtusis incurvis infra triplicatis; stigmatibus exserto bilobato, apice styli curvato; capsula ovato-acuminata 1 cm. longa. — DURANGO: near El Salto, altitude 2440-2600 m., 12 July, 1898, *E. W. Nelson*, no. 4553 (type, in hb. U. S. Nat. Mus., dupl. in hb. Gray). This is related to *C. Schaffneri* and *C. Pringlei*, but differs from all of the same alliance in general habit of growth, pubescence, and most especially in the lower lip of the corolla, which has the divisions separated by a plicate sinus that is often toothed at the top.

14. *C. PRINGLEI* Fernald, caulibus plurimis decumbentibus 3-6 cm. altis; foliis imis confertis et bracteiformibus ovatis 3-4 mm. longis, superioribus lanceolatis vel oblongo-lanceolatis simplicibus vel apice trilobatis pilosis 1.5-2 cm. longis; bracteis foliis similibus, laciniis angustis coloratis; calyce tubuloso 2.5-3.5 cm. longo, infra ochroleuco piloso, supra rubro puberulenti, segmentis 6-8 mm. longis obtuse bilobatis; corolla vix exserta, galea angusta pilosa, labio inferiore tri-saccato, lobis 1 mm. longis. — Proc. Am. Acad. xl. 56 (1904). — HIDALGO: Sierra de Pachuca, *C. G. Pringle*, nos. 9647, 8666 (type, in hb. Gray); *Rose & Hay*, no. 5581. MORELOS: Mount Popocatepetl, *Rose & Hay*, no. 6022. Related to *C. Schaffneri* but with much larger flowers and densely pilose calyx.

15. *C. SCHAFFNERI* Hemsl., hirsuta scabrida basi ramosa, ramis vel caulibus erectis vel adscendentibus, 2.5-5 cm. altis densissime foliosis; foliis integris anguste lineari-lanceolatis subacutis ca. 2 cm. longis; bracteis trinerviis trifidis, lobis linearibus acutis, medio longiore; calycis lobis rotundatis vel obscure emarginatis; corollae galea paulo exserta, dorso hirsuta; labio inferiore tridentato. — Hemsl. l. c. 462, t. lxiii. B. f. 7-13 (1882). — STATE OF MEXICO: in the valley of Mexico, *Schaffner*, no. 373 (dupl. of type, in hb. Gray); Desierto Viejo, same region, *Bourgeau*, no. 874; Flor de Maria, *C. G. Pringle*, no. 3193; Mount Ixtaccihuatl, altitude 3355-3660 m., *C. A. Purpus*, no. 218. MORELOS: meadows about Tres Marias, altitude 2897 m., *C. G. Pringle*, no. 13,141.

Var. *cinerascens*, n. var., nana pallida foliosa cinerascens; caulibus ramosis caespitosus 1 dm. altis retrorse pilosis; foliis linearibus vel saepissime divaricate pinnatisectis, laciniis 3-5 attenuatis (media elongata) nervatis scabrido-hispidis; bracteis foliis superioribus similibus, apice ochroleucis puberulenti-glandulosis; calyce 1.5 cm. longo

fisso 7 mm., segmentis oblique emarginatis 4 mm. latis 4-nerviis scabrido-glandulosus; corollae galea calycem superanti 1.5 mm. lata 8 mm. longa, dorso puberulenti-glandulosa; labio inferiore paulo protuberanti triplicato, dentibus acutis; stigmatibus exserto capitato; capsula elliptica acuta 1 cm. longa, in calyce inclusa. — PUEBLA: dry hills about Chalchicomula, altitude 2592 m., 27 July, 1901, *C. G. Pringle*, no. 8545 (type, in hb. Gray); same locality, *Rose & Hay*, no. 5809.

16. *C. TOLUCENSIS* HBK., procumbens ramosa; caulibus vel ramis 5–6 cm. altis; foliis lanceolatis obtusis hispidis, inferioribus integris, superioribus apice trifidis, laciniis obtusis ca. 2 cm. longis; bracteis trifidis trinerviis, lobo intermedio oblongo obtuso, lateralibus linearibus intermedium subaequantibus; floribus 2 cm. longis sessilibus; calycis segmentis rotundatis; corollae galea vix exserta, dorso hirta; labio inferiore acute tridentato. — HBK. Nov. Gen. et Spec. ii. 329 (1817); Benth. l. c. 530; Mart. & Gal. l. c. 29; Hemsl. l. c. 463. — High mountains of southern MEXICO: Mt. Ixtaccihuatl, *C. A. Purpus*, no. 230; bare summits of Nevada de Toluca, *C. G. Pringle*, no. 4250; Mt. Orizaba, *Rose & Hay*, no. 5770. In hb. U. S. Nat. Mus. there is also a specimen collected by *E. W. Nelson* on Mt. Toluca.

17. *C. MORANENSIS* HBK. "caulibus suffruticosis, simplicibus, prostratis, pubescenti-hispidis; foliis lanceolatis, acutis, hispidis, integris, superioribus trifidis; floribus axillaribus, sessilibus; corolla calycem paulo superante; calycis lobis rotundatis emarginatis; corollae labio inferiori brevissimo, dentato." — HBK. Nov. Gen. et Spec. ii. 329 (1817); Benth. l. c. 530; Mart. & Gal. l. c. 30; Hemsl. l. c. 462. — There seem to be no specimens of this in hb. Gray. The type was collected in temperate localities between Pachuca and Moran, State of Hidalgo probably.

18. *C. nervata*, n. sp., herbacea, caulibus 1–5, 1–3 dm. altis divaricate pilosis et glandulare pubescentibus; foliis 3–5-nerviis, inferioribus oblanceolatis apice obtusis rectis integris 3–6 cm. longis, 1 cm. latis, superioribus oblongis apice obtusis basi angustatis et amplexicaulibus, floribus inferioribus sessilibus in axillis foliorum, superioribus confertis et occultis in spicis ornatis, bracteis obovatis 2–3 cm. longis apice coccineis; calyce 2 cm. longo 4 mm. lato vix corollam superanti, fisso 5 mm., segmentis 4-nerviis apice rotundatis; corollae galea 1 cm. longa dorso glandulari-pilosa, labio inferiore protuberanti trisaccato infra laciniis tuberculati-rugoso, laciniis exterioribus 3 triangularibus obtusis, interioribus 2 brevioribus sinus terminantibus; stylo stigmatibus exsertis; capsula oblique oblonga compressa 1 cm. longa. — CHIHUAHUA: vicinity of Madera, May to June, 1908, altitude 2250 m., *F. Palmer*, no. 274 (type, in hb. Gray). There is also in hb. Gray a fragmentary

specimen from the same region, *C. V. Hartman*, no. 150 (Lumholtz Exped.), which may be this species. *C. nervata* resembles *C. aspera* in the tuberculate-rugose sac-like lower lip of the corolla, but differs in having the segments of the calyx quite entire and in the glandular pubescence. The flowers are smaller and the capsules less ovoid. The strongly nerved leaves suggest *C. lithospermoides*, but otherwise it is quite different.

19. *C. CONZATTII* Fernald, "suffruticosa; caulibus simplicibus erectis glanduloso-puberulis; foliis linearibus vel lineari-lanceolatis, 3-5-nerviis, 2-7 cm. longis dense puberulis, inferioribus integris, superioribus pectinatis, laciniis linearibus patentibus; bracteis oblongis 1.5-2.5 cm. longis, summis coccineis trifidis, lobis lateralibus linearibus vel spatulatis, intermedio majore anguste obovato integro vel obsolete trilobo; pedicellis 1 mm. longis; calyce mediam tantum corollam paululo superante 1.5-1.8 cm. longo viridi et albo, antice et postice aequaliter fisso, lobis oblongis subtruncatis 5-6 mm. longis; corolla viridi et rubella 2.2-2.5 cm. longa, tubo 1.2-1.3 cm. longo, galea elongata, labii lobis obtusis 1 mm. longis." — Proc. Am. Acad. xliii. 67 (1907). — OAXACA: Santa Ines del Monte, Zimatlan, altitude 2700 m. *Conzatti*, no. 1360 (type, in hb. Gray); 25 km. southwest of City of Oaxaca, altitude 2287-2897 m., *E. W. Nelson*, no. 1368.

20. *C. rigida*, n. sp., perennis rigida recte sparseque ramosa 3 dm. alta; caulibus et foliis purpurascensibus albo-pubescentibus; foliis inferioribus oblanceolatis, ceteris lanceolatis apice obtusis basi non dilatatis ca. 3-4 cm. longis 2-5 mm. latis; floribus sessilibus in spicis elongatis; bracteis oblongis apice rotundatis vel acutis coccineis puberulis flores subaequantibus, basi pilosis 2-2.5 cm. longis 5-8 mm. latis; calyce fisso 1 cm., segmentis ca. 5 mm. latis, apice oblique truncatis, 4-nerviis coccineis puberulis; galea exserta 5 mm., dorso puberula viridi, antice membranacea coccinea; labio inferiore obtuso, lobis membranaceis, lateralibus oblique truncatis, medio deltoideo obtuso, 1 mm. longo et lato, sinubus crassis involutis; stylo exserto 3 mm., stigmatibus bilamellatis; capsulis caulibus adpressis oblongo-cylindraceis acuminatis 15 mm. longis. — Hills near Chihuahua, 16 April, 1885, *C. G. Pringle*, no. 188, in part (type, in hb. Gray). As in *C. Conzattii*, to which this species is related, the flower after anthesis has a tendency to curve outward above the capsule.

21. *C. falcata*, n. sp., caule simplici recto 3-3.5 dm. alto glandulare puberulenti et tenuiter piloso rubro angulato; foliis oblongo-lanceolatis integris vel sparse et irregulariter laciniatis 2-2.5 cm. longis, basi 3-10 mm. latis dilatate et auriculate amplexicaulibus 3-5-nerviis glandulare pilosis; bracteis foliis latioribus et longioribus, inferioribus viri-



dibus, supremis apice coccineis; floribus sessilibus interruptis in spicis elongatis, falcatis bracteis superantibus; calyce fisso 12 mm., tubo anguste cylindrico piloso, segmentis dilatatis 4-5 mm. latis coccineis puberulentibus; galea et labio inferiore calycem superantibus; galea 1 cm. longa, basi 3-4 mm. lata, dorso viridi glandulare pilosa, antice coccinea membranacea; labio inferiore protuberanti trisaccato, dentibus acutis viridibus, sinubus implicatis cum plicaturis interioribus; stylo apice et stigmate subclavato exsertis; capsula ovata oblique-acuminata. — PUEBLA: Mount Orizaba, altitude 3660 m., 14 Aug., 1901, *C. G. Pringle*, no. 8560 (type, in hb. Gray). This is related to *C. Conzattii*, differing in having much longer flowers, with segments of the calyx red instead of green. The falcate flowers spreading outwards resemble those of § *Hemichroma*, but the equally cleft calyx is that of § *Euchroma*. It is a showy species.

22. *C. HIRSUTA* Mart. & Gal., "caule fruticuloso humili ramoso dense hirsuto-villoso; foliis obovato-spatulatis 3-nerviis apice rotundatis integerrimis villosis scabris, corolla calycem coccineum longe excedente. — Folia  $\frac{1}{2}$ -pollicaria, flores pollicares. Dans les champs de Zacuapan, à 3000 pieds. Fl. rouge vif. Février-juillet." — Bull. Acad. Brux. xii. pt. 2, 29 (1845); Walp. Rep. vi. 651; Hemsl. l. c. 460; Greenman, Proc. Am. Acad. xli. 460. *C. obovata* Benth. l. c. 528. — HIDALGO: in a barranca below Trinidad Iron Works, altitude 1525 m., *C. G. Pringle*, no. 8935. Through the kindness of Dr. Prain, Director of the Royal Gardens at Kew, specimens under this number were compared with authenticated specimens in hb. Kew and reported as similar. There is a tendency in the specimens in hb. Gray to have incised dentate or lacinate leaves. Bentham placed this in § *Epichroma* on account of the somewhat ampliate calyx-limb. It is entirely unlike the other species in that section in habit, foliage, bracts, and flowers, and has the characteristic equally cleft calyx-divisions of § *Euchroma*, so in this synopsis it is included under the latter section.

23. *C. SCORZONERIFOLIA* HBK., simplex vel basi ramosa perennis; caulibus piloso-hispidis; foliis linearibus vel lanceolatis hispidulis; apice saepe angustatis; floribus spicatis sessilibus; bracteis oblongis acutis integris pilosis coccineis vel purpurascenscentibus florem subaequantibus; calycis segmentis coloratis emarginato-bidentatis; corolla calycem vix superanti; galea lineari dorso pilosa; labio inferiori quinque-dentato; stylo exserto filiformi; stigmate capitato emarginato-bilobato; capsula oblonga compressa acuminata vel acuta. — HBK. Nov. Gen. et Spec. ii. 331, t. 165 (1817); Mart. & Gal. l. c. 29. *C. scorzoneraefolia* Benth. l. c. 529; Hemsl. l. c. 462. *C. speciosa* Mart. & Gal. l. c. 30 (1845). The following are in hb. Gray: — PUEBLA: Mt. Orizaba,

altitude 3350 m., *H. E. Seaton*, no. 208. SAN LUIS POTOSI: altitude 1830-2440 m., *Parry & Palmer*, no. 690, coll. of 1878; hillsides, Las Canoas, *C. G. Pringle*, no. 3066. STATE OF MEXICO: Nevada de Toluca, about timber-line, altitude 4000 m., *C. G. Pringle*, no. 4225; Sierra de Ajusco, *J. W. Harshberger*, no. 123 a. COAHUILA: Sierra de Parras, *C. A. Purpus*, no. 1051; Levios, 67 km. east of Saltillo, *E. Palmer*, no. 2026, coll. of 1880. NUEVO LEON: near Monterey, *C. G. Pringle*, no. 2236; north-east side of Volcano Colima, *P. Goldsmith*, no. 80 a. DURANGO: Otinapa, *E. Palmer*, no. 367, coll. of 1906, in part. Mexico without locality: *Dr. J. Gregg*, no. 407. The following have been examined from hb. U. S. Nat. Mus. — Mount Orizaba, *E. W. Nelson*, no. 282, *Rose & Hay*, no. 5741. TAMAULIPAS: mountains near Miquihuana, altitude 2135-2745 m., *E. W. Nelson*, no. 4485. This is a showy plant, distinguished from allied species by the pilose pubescence (somewhat glandular only on the inflorescence) and by the five-toothed lower lip of the corolla. The species may prove to be an aggregate when more fully understood. The forms with strictly acuminate capsules do not seem exactly similar to those with capsules subtruncate to acute, but the material has not been sufficient to warrant a division.

24. *C. GLANDULOSA* Greenman, annua vel perennis basi indurata, pilosa et glandulari-pubescent; caulibus simplicibus rectis 1-3 dm. altis; foliis viridibus vel purpurascens sessilibus, paulo basi dilatatis et amplexicaulibus, lanceolato-attenuatis 1.5-5 cm. longis 1-6 mm. latis, acutis integris et saepe crispe undulatis trinerviis; floribus sessilibus et confertis 2-2.8 cm. longis in spicis ornatis 2-18 cm. longis, floribus inferioribus distantibus; bracteis inferioribus lanceolato-acuminatis foliaceis, superioribus oblongis apice rhomboideis coccineis vel flavis saepe flores superantibus; calyce fisso 8 mm., segmentis obtusis vel vix emarginatis; corolla 2-2.7 cm. longa calycem superanti 3-5 mm., galea recta 7-9 mm. longa dorso viridi glandulari-puberulenti, antice alba membranacea; capsula ovoidea acuminata 10-12 mm. longa. — *Proc. Am. Acad.* xli. 247 (1905). — STATE OF MEXICO: hills near Lecheria Station, altitude 2200 m., *C. G. Pringle*, no. 10,000 (type, in hb. Gray); hills above Santa Fé, altitude 2440 m., *C. G. Pringle*, no. 7979; *Schaffner*, no. 322. DURANGO: Otinapa, *E. Palmer*, no. 367, coll. of 1906, in part; City of Durango, *E. W. Nelson*, no. 4601. OAXACA: Sierra de San Felipe, altitude 3140 m., *C. G. Pringle*, no. 4722, in part; 10 km. above Domingullo, altitude 1980 m., *E. W. Nelson*, no. 1644; summit of Mt. Zempoaltepec, altitude 3470 m., *E. W. Nelson*, no. 626 (hb. U. S. Nat. Mus.); Sierra de Tápalo, altitude 2500 m., *González & Conzatti*, no. 759 (doubtful).

HIDALGO: Ixmiquilpan, mountain slopes, *C. A. Purpus*, no. 1411 a; Sierra de Pachuca, altitude 2897 m., *C. G. Pringle*, no. 7618, in part; hills near Julianaciugo, *C. G. Pringle*, no. 13,278. PUEBLA: Mt. Orizaba, *Rose & Hay*, no. 5686. SAN LUIS POTOSI: in montibus San Miguelito, *J. G. Schaffner*, no. 741; *Parry & Palmer*, no. 691. COAHUILA: northeast side of Mt. Colima, *P. Goldsmith*, no. 80. Seemann's plant from northwest Mexico is doubtfully included. These specimens probably represent an aggregate of perhaps two or more species which it seems impossible with the present knowledge to segregate. The line between this species and the preceding is not very clear. It is somewhat doubtful in the light of present investigation how much weight is to be placed on the form of the lower lip of the corolla. The above specimens are all characterized by a lower lip with three teeth incurving in age, separated by a broad infolding sinus, so that when it is spread open the teeth are quite separated. *C. scorzonrifolia* has the teeth of the lower lip rather close and the sinus marked by smaller teeth. The indumentum of *C. glandulosa* is in general pilose, but there is also present a close glandular pubescence or almost puberulence, the glands under a lens appearing shortly and finely stipitate. The leaves are somewhat variable, though the typical specimens in each species have rather long acuminate leaves. Some specimens included among the above have obtuse leaves not at all acuminate.

25. *C. cryptandra*, n. sp., pilosa et hirsuti-scabrida, striata; foliis superioribus ovatis acuminatis integris 3-5-nerviis, apice obtusis, basi cordato-amplexicaulibus, nerviis hispido-scabridis; spicis coccineis, floribus confertis breviter pedicellatis, bracteis obovatis coloratis flores superantibus, 3 cm. longis, 1-1.5 cm. latis integris apice rotundatis; calyce fisso 1 cm., 2.5 cm. longo, laciniis obtuse bilobatis 4 mm. longis, glandulari-pilosis; galea paulo calycem superanti dorso pilosa et glandulosa; stylo curvato exserto, stigmatibus clavatis; capsula compressa ovato-acuminata. — COLIMA: Cuchilla, northeast side of Volcano Colima, 22 July, 1905, *P. Goldsmith*, no. 76 (type, in hb. Gray). — This is a showy species related to *C. scorzonrifolia*, differing in its more veiny leaves, coarse and rough pubescence, and in having the lower lip of the corolla with three instead of five teeth. It is also related to *C. lithospermoides*, but the bracts are much larger, almost completely concealing the flowers.

26. *C. LITHOSPERMOIDES* HBK., caule recto simpliciter piloso-hispido; foliis lanceolato-linearibus, apice angustatis et obtusis, integris valde trinerviis piloso-hispidis ca. 5-7 mm. latis 3-6 cm. longis; floribus spicatis sessilibus; bracteis apice dilatatis rubicundis flores excedentibus; calycis segmentis bilobatis, lobis rotundatis; corolla alba vix calyce



longiore; galea dorso pubescenti; labio inferiore brevissimo tridentato, dentibus incurvis; stylo exserto, stigmatе capitato-emarginato; capsula ovata vix acuta. — HBK. Nov. Gen. et Spec. ii. 331, t. 164 (1817); Benth. l. c. 530; Mart. & Gal. l. c. 28; Hemsl. l. c. 461. *C. angustifolia* Mart. & Gal. l. c. 29 (1845) is considered a synonym of this, but the name is preoccupied. The range of this species, if all that seem to agree with the description and authenticated specimens are correctly identified, is from South America to N. W. Mexico. The type was collected probably in the State of Hidalgo near Real del Monte. Specimens in hb. Gray. — JALISCO: Guadalajara, *C. G. Pringle*, nos. 2565, 9348, 9461. OAXACA: Santa Domingo, *E. W. Nelson*, no. 2679. ORIZABA: San Cristobal, *Bourgeau*, no. 2904; N. W. Mexico, *Seemann*. There is also included no. 4168, collected by *C. G. Pringle* in Michoacan, distributed as *C. angustifolia* Mart. & Gal.

27. *C. Nelsonii*, n. sp., suffrutescens; caulibus simplicibus 3-4 dm. altis striatis glabrescentibus; foliis ovato-acuminatis 3-5-nerviis auriculati-amplexicaulibus apice obtusis integris 5-7 cm. longis 1.5-2 cm. latis desuper glabris, nerviis inferioribus puberulentibus; spicis coccineis investis pilis longis albis, floribus confertis, bracteis apice dilatatis integris et undulatis vel obtuse et breviter lobatis calyces superantibus; calyce 18 mm. longo, 7 mm. lato ad 1 cm. fisso, laciniis inaequale et obtuse bilobatis; galea recta tubum aequanti, calycem superanti, dorso glandulari-puberulenti; labio inferiore triplicato, laciniis 3 rectis acuminatis; stylo curvato exserto; stigmatе capitato obscure emarginato; capsula ovata acuminata compressa. — SOUTHWEST CHIHUAHUA: Mount Mohinora, 1 September, 1898, *E. W. Nelson*, no. 4895 (type, in hb. U. S. Nat. Mus. and hb. Gray). This species is related to *C. scorzonifolia*, but differs in having much larger almost smooth leaves. The corolla is dissimilar, with three rather long acuminate divisions instead of five short teeth. *C. Nelsonii* is a showy plant with a large subcapitate spike of scarlet bracts and flowers terminating the tall stems.

28. *C. LANATA* Gray, tomentosa floccosa simplici denso undique incana; foliis linearibus integerrimis, floralibus nunc trifidis apice coloratis; spicis demum interruptis; calycis lobis obovato-oblongis integerrimis retusisve. — Gray in Torr. Bot. Mex. Bound. Surv. 118 (1859); Gray, Synop. Fl. N. Am. ii. pt. 1, 298; Hemsl. l. c. 461. — The type (in hb. Gray) was collected along and near the Rio Grande river from Eagle Pass to El Paso. COAHUILA: Saltillo, *E. Palmer*, no. 76, coll. of 1898, and no. 990, coll. of 1880; *C. C. Parry*, no. 20; near Diaz, *C. G. Pringle*, no. 9032, and Carneros Pass, no. 3192. NORTHERN ZACATECAS: Cedros, *F. E. Lloyd*, no. 102. San Luis Potosi to San Antonio, Texas, *C. C. Parry*, no. 689.

29. *C. GUADALUPENSIS* Brandegee, frutescens intricate ramosa, 2-3 dm. alta; caulibus senioribus glabris atris, junioribus tomentosis; foliis anguste spatulatis 15-18 mm. longis, 2-4 mm. latis dense tomentosis; calycis segmentis tubum aequantibus; galea calycem paulo superanti tubum aequanti; labio inferiore brevissimo tridentato. — Zoe, v. 166 (1903). — Guadalupe Island off the coast of Lower California, A. W. Anthony, 1896 (type, in hb. Univ. Calif.), Harry Drent, 1898, Dr. E. Palmer, no. 59 (coll. of 1875). This species is related to *C. foliolosa*, but is more intricately and divaricately branched. The stems are harder and more woody, while the leaves are longer and narrower at base. In Dr. Palmer's specimen the longest leaves are 6 cm. long and the broadest almost 1 cm. wide. It is a younger and more vigorous shoot than the type, which has been examined through the kindness of T. S. Brandegee and H. M. Hall.

30. *C. INTEGRRA* Gray, perennis; caulibus tomentosis, basi ramosis 3-7 dm. altis; foliis lineari-lanceolatis tomentulosis integris 3-8 cm. longis 4-8 mm. latis; floribus sessilibus in spicis brevibus demum elongatis; bracteis oblongis obovatis coccineis subpetaloideis floribus paulo brevioribus; calyce 2-3 cm. longo colorato, lobis bifidis lanceolatis obtusiusculis; corolla viridi-coccinea ca. 1.6 cm. longa; labio inferiore brevissimo. — Torr. Bot. Mex. Bound. Surv. 119 (1859); Gray, Synop. Fl. N. Am. ii. pt. 1, 298; Hemsl. l. c. 461. *C. tomentosa* Gray in Torr. Bot. Mex. Bound. Surv. 118 (1859). — CHIHUAHUA: near Colonia Garcia, Sierra Madre, altitude 2287 m., Townsend & Barber, no. 448; Santa Eulalia Mts., C. G. Pringle, no. 226; hills near Chihuahua, Palmer, no. 87, coll. of 1908; Puerto de San Diego, altitude 1982 m., C. V. Hartman, no. 598 (Lumholtz Exped.). SONORA: Mabibi, Geo. Thurber, no. 438 (type of *C. tomentosa*). In hb. U. S. Nat. Mus. are specimens from Chihuahua, Sierra Madre, E. W. Nelson, no. 6495.

31. *C. aspera*, n. sp., suffruticosa; caulibus simplicibus sparse pilosis et scabrido-puberulentibus angulatis rectis 3 dm. altis vel majoribus; foliis oblongis trinerviis scabrido-hispidis 4 cm. longis 5-10 mm. latis, apice obtusis vel acutis; bracteis inferioribus foliis similibus, flores superantibus, superioribus brevioribus apice margineque coloratis quam flores brevioribus; calyce 2.2 cm. longo subaequaliter in altitudinem 8 mm. fisso, segmentis bilobatis, lobulis subulatis 5 mm. longis, tubo nervato; corollae galea calycem superanti 1-2 mm. obtusa, dorso glandulare puberulenti; labio inferiore trisaccato rugoso-tuberculato, laciniis viridibus, media incurva bicarinata acuta, lateralibus latioribus dentatis; stylo exserto curvato, stigmatibus capitato; ovario oblique acuminato. — CHIHUAHUA: near Colonia Garcia, Sierra Madre, altitude

2287 m., 3 June, 1899, *Townsend & Barber*, no. 449 (type, in hb. Gray), also no. 250; same locality, *E. W. Nelson*, nos. 6227, 6101 (hb. U. S. Nat. Mus.). DURANGO: Otinapa, *E. Palmer*, no. 367 in part, July–August, 1906. The two equal segments of the calyx place this in *Euchroma*, but these parts are sharply cleft as in *Hemichroma*. The lower lip of the corolla resembles that of *C. nervata*.

32. *C. ctenodonta*, n. sp., perennis glandulari-pilosa; rhizoma gracili; caule simplici recto gracili 2–3.5 dm. alto; foliis infimis non rosulatis sed imbricatis lanceolatis integris trinerviis 3 cm. longis 5 mm. latis, apice acuminatis; foliis ceteris imbricatis vel distantibus lanceolato-acuminatis pectinatis cum lobulis filiformibus 1–5 mm. longis distantibus 2–8 mm., saepe pectinato-dentatis, basi cordato-amplexicaulibus et paulo decurrentibus; spicis capitatis non-numquam pedunculatis et demum elongatis; bracteis supremis pectinatis vel anguste laciniatis quam flores brevioribus, apice coccineis; floribus sessilibus paucis subdivaricatis; calyce coccineo nunc paulo longiore nunc corolla brevior, segmentis acuti 1–2 mm. in altitudinem bifidis; corollae galea obtusa exserta 4–7 mm. dorso barbata; labio inferiore non viso; stylo exserto 1–2 mm. gracili; stigmatibus clavato integro; capsula elliptica acuta. — OAXACA: wet meadows, Sierra de Clavellinas, altitude 2745 m., 16 October, 1894, *C. G. Pringle*, no. 4986 (type, in hb. Gray). — This number was distributed as *C. pectinata*, but cannot be that shrubby plant, nor is it to be classed in the same alliance. It more nearly approaches *C. patriotica*, but differs from that well-marked species in leaves, pubescence, and flowers. It is a more slender plant with simple stems. There are features which ally it to *C. minor*, such as, the narrow segments of the calyx-divisions, the slender red-tipped divisions of the uppermost bracts, and the conspicuously colored lower lip of the corolla. The leaves are typically pectinate with the rachis lanceolate. It is doubtfully placed in *Euchroma*.

33. *C. BRYANTI* Brandegee, annua 1.5–3 dm. alta divaricate pilosa ramosa, ramulis gracilibus rectis; foliis inferioribus linearibus integris, ceteris pinnatisectis, laciniis 3–7 linearibus acutis; floribus spicatis apice confertis infra elongatis et interruptis; bracteis similibus foliis superioribus, apice coccineis vel ochroleucis; calycis segmentis 7–9 mm. longis 2–3 mm. in altitudinem bisectis, laciniis lanceolatis; corolla calycem aequanti 15–18 mm. longa, galea brevi, labii inferioris lobis brevibus incurvatis; capsula oblongo-cylindracea vel subellipsoidea 1 cm. longa. — Proc. Cal. Acad. ser. 2, ii. 192 (1889), iii. 157. — In habit of growth and foliage this species resembles *Orthocarpus*, but the flowers are those of *Castilleja*, approaching *C. affinis*, though much smaller and less exserted. The pods are different from those of any

other species, being much narrower, approaching those of *C. minor*. The lower part of the stem is very leafy, the leaves becoming 1 dm. long, the rachis and divisions 0.5–2 mm. broad. The type and all specimens are in hb. Univ. Calif. except a small part of a flowering branch in hb. Gray and perhaps also in hb. U. S. Nat. Mus., collected by Lyman Belding no. 4, at Laguna, Lower California, altitude 915 m. The specimens from hb. Univ. Calif. were kindly loaned by T. S. Brandegee and H. M. Hall. The species has been found only in Lower California and at the following localities: San Jorge, San Estaban, Sierra de Laguna, Sierra de San Francisquito, San Jose del Cabo.

34. *C. AFFINIS* H. & A., perennis herbacea; caule simplici piloso-hispido 3–6 dm. alto; foliis lineari-lanceolatis trinerviis integris raro pinnatisectis; floribus subracemosis, inferioribus pedunculatis, superioribus confertis; bracteis similibus foliis brevioribus; calycis segmentis acute bilobis; corolla calyceem superanti et valde divaricate exserta; labio inferiore exserto protuberanti. — Bot. Beech. 154 (1833); Benth. in DC. Prodr. x. 532; Gray in Bot. Cal. i. 573, and Synop. Fl. N. Am. ii. pt. 1, 296; Hemsl. l. c. 460. — This species is distinctively Californian and peculiar to the coast region. It varies extremely in foliage and flowers but can scarcely be divided into varieties. The Mexican specimens in hb. Gray are all from the coast of Lower California, — Todos Santos Island, A. W. Anthony, no. 198; San Quentin, E. Palmer, no. 642, coll. of 1889.

35. *C. MINOR* Gray, annua vel perennis glandulosa et sparse pilosa; caulibus simplicibus vel ramosis 1-plurimis 3–6 dm. altis gracilibus foliosis; foliis anguste linearibus apice attenuatis 2–5 cm. longis; floribus racemosis, pedicellis brevibus filiformibus rectis; bracteis terminalibus fasciculatis apice coloratis anguste linearibus et attenuatis; calyce subfalcato in altitudinem 1.5 cm. fisso, laciniis 2 filiformibus 1–5 mm. longis; galea et labio e fissura exsertis, galeae dentibus triangularibus coccineis exsertis; capsula anguste ovoideo-cylindracea acuta. — Gray in Bot. Cal. i. 573 (1876), and Synop. Fl. N. Am. ii. pt. 2, 295. *C. affinis*, var. *minor* Gray in Torr. Bot. Mex. Bound. Surv. 119. *C. affinis* Seemann, Bot. Voy. Herald, 323, not H. & A. — NEW MEXICO: beds of exsiccated streams near the copper mines, Wright, no. 1494 (type, in hb. Gray). CHIHUAHUA: *C. V. Hartman*, no. 583 (Lumholtz Exped.); *Bigelow*; *Wright*, no. 1493; Presidio del Norte, *Schott*. SONORA: Los Animos, *Thurber*, no. 330; Tubac, *Parry*; Santa Cruz Mountains, *Captain E. K. Smith*. N. W. Mexico, *Seemann*, distributed as *C. affinis*. This species has more slender flowers than its allies. At the summit of the stem the bracts and flowers are

closely clustered, the ribbon-like bracts surpassing the flowers; later the flowers become rather distant on the flowering axis.

36. *C. MEXICANA* (Hemsl.) Gray, annua vel biennis nana 7-15 cm. alta hirsuta; caulibus dense foliosis; foliis pinnatifidis sessilibus, lobis linearibus utrinque saepius 2; floribus sessilibus 5-6 cm. longis rectis, post anthesim divaricatis; bracteis calyce brevioribus basi latis trinerviis, alte trilobatis, lobis linearibus obtusiusculis, lateralibus paulo brevioribus; calycis lobis viridibus, laciniis anguste linearibus non-numquam idem bifidis; corolla calycem triplo superanti gracili puberula; labiis subaequalibus inferiore tripartito basi obscure saccato. — Gray in Proc. Am. Acad. xxi. 404 (1886). *Orthocarpus mexicanus* Hemsl. Biol. Cent.-Am. Bot. ii. 463, t. 63 A. f. 1-6 (1882). — The type is in hb. Kew and was collected in Zacatecas, North Mexico, by Coulter. COAHUILA: Sierra Pata Galana, *C. A. Purpus*, no. 1050; Saltillo, *E. Palmer*, no. 530, coll. of 1905, 992 and 993, coll. of 1880, also no. 13, coll. of 1898; same locality, *C. C. Parry*, no. 20½. NUEVO LEON: near Monterey, altitude 610 m., *C. G. Pringle*, no. 10,156. SAN LUIS POTOSI: San Miguelito Mountains, *Dr. J. G. Schaffner*, no. 82. CHIHUAHUA: on rocky hills near town, *C. G. Pringle*, no. 209; Pueblo de Galeana, no. 657, and Puerto de St. Diego, *C. V. Hartman*, no. 631 (Lumboltz Exped.). *C. sessiliflora* Pursh is excluded as all specimens seen appear to be *C. mexicana*. The two are very closely related.

37. *C. auriculata*, n. sp., suffruticosa canescens pilosa et glandulosa; caulibus ramosis; ramis ascendentibus; foliis imbricatis anguste deltoideis acutis vel apice obtusis, basi auriculate amplexicaulibus, integris 1-3 cm. longis 5-15 mm. latis, palmate trinerviis, nervio medio distinctissimo, cinereis scabridis cum glandulis et pilis glandulosis; floribus imbricate spicatis; bracteis foliis similibus, supremis coloratis; spicis confertis, floribus subsessilibus; calyce 2.5 cm. longo antice in altitudinem 2.5 cm., postice 7 mm. fisso, laciniis integris vel bidentatis, 2-3-nerviis; corolla 3.7 cm. longa, galea paulo tubo longiore, antice membranacea, dorso glandulosa, exserta 5-10 mm.; labii inferioris lobis 3, exterioribus linearibus acutis 3 mm. longis paulo medium excedentibus sinibus intus plicatis; stylo exserto; stigmatibus clavato apice capitato et obscure emarginato; capsula rhomboideo-orbiculata acuminata compressa 1 cm. longa. — Between Huajuapán, OAXACA, and Retlatzingo, PUEBLA, November 19, 1894, *E. W. Nelson*, no. 1992 (type, in hb. Gray and duplicate in hb. U. S. Nat. Mus.). This species is nearest to *C. longiflora*, differing most noticeably in its broader, conspicuously auriculate, closely imbricated leaves. The flowers are more erect and the corolla in anthesis more in a line with the calyx.

38. *C. LONGIFLORA* Kunze, "caule suffruticoso, tenui, erecto, imprimis



basi ramoso, foliis, inferioribus suboppositis, horizontalibus deflexisve, e basi amplectente dilatato-auriculata linearibus acuminatis, superioribus latioribus, omnibus trinerviis; bracteis ovato-acuminatis, trinerviis, pallidis, summo apice lateritiis, divergenti-divaricatis; floribus brevissime pedunculatis terminalibus, subracemosis, paucis, calycis tubulosi compressi lobis elongatis, bidentatis (aurantiis), corolla longe exserta, labio superiori attenuato, obtuso, recto (apice rubello), inferiore minuto, bi-, rarius trifido, lobis porrectis, obtusis, stylo parum exserto." — *Linnaea*, xvi. 312 (1842); *Mart. & Gal.* l. c. 28; *Benth.* l. c. 533; *Hemsl.* l. c. 461. — **PUEBLA**: near Tehuacan, altitude 1700 m., *C. G. Pringle*, no. 9517, *C. A. Purpus*, no. 1287, *Rose & Hay*, no. 5844 (hb. U. S. Nat. Mus.); also in calcareous soil, altitude 1677 m., *C. G. Pringle*, no. 6250. **MICHOACAN**: Las Reyes, *E. W. Nelson*, no. 6859; Volcano Jorullo, *E. W. Nelson*, no. 6949. **OAXACA**: valley of Oaxaca, alt. 1675-2290 m., *E. W. Nelson*, no. 1459 in part (hb. U. S. Nat. Mus.).

39. *C. subalpina*, n. sp., perennis herbacea; rhizomatibus ligneis gracilibus; caulibus 3 dm. altis simplicibus angulatis albo-pilosis; foliis lanceolatis apice acutis basi auriculati-amplexicaulibus 2.5-3.5 cm. longis ca. 5 mm. latis trinerviis sparse pilosis et dense scabrido-puberulis et obscure glandulosis; foliis floralibus quam caulina paulo latioribus apice nunc coloratis nunc viridibus; floribus rectis subsessilibus in spicis demum elongatis; calyce 3 cm. longo piloso antice 2 cm. postice 16 mm. in altitudinem fisso; segmentis pilosis coccineis acute bidentatis; corolla recta 4 mm. longa, galea obtusa 2 mm. longa, dorso barbata, antice rubra membranacea, labio inferiore brevi protuberanti, laciniis incurvis ovato-subulatis brevibus, sinus similibus glandulis, stylo filiformi exserto 5 mm.; stigmatibus clavatis; capsula ovato-acuminata cauli adpressa, 12 mm. longa. — **OAXACA**: Sierra de San Felipe, altitude 3140 m., 26 June, 1894, *C. G. Pringle*, no. 4722 in part, distributed under *C. scorzonrifolia* HBK. (type, in hb. Gray). It belongs near *C. longiflora* but has different pubescence, and generally longer and narrower leaves. The flowers are more slender and less crowded than in the other species and generally more erect.

40. *C. tenuiflora* Benth., fruticosa scabrido-pubescent ramosa vel simplex; foliis linearibus vel lanceolatis basi amplexicauli-dilatatis integris; floribus spicatis; bracteis lanceolatis acutis, supremis apice coloratis quam folia latioribus; calyce elongato acute 2-4-dentato; corollae galea elongata; labio inferiore protuberanti, lobis brevibus subulato-acuminatis, primum inflexis demum reflexis. — *Pl. Hartweg*, 22 (1839); *DC. Prodr.* x. 533; *Hemsl.* l. c. 463; *Loesen.* l. c. 285. — The following Mexican specimens are in hb. Gray unless otherwise

indicated: *Hartweg*, no. 191, type; *Coulter*, no. 1354. STATE OF MEXICO: Tacubaya (Tokabaya), *Bilimek*, no. 288; Sierra de Ajusco, 2592 m. alt., *C. G. Pringle*, nos. 9476 and 11,063; Chapultepec, *C. G. Pringle*, no. 1472; valley of Mexico, *Bourgeau*, no. 125. OAXACA: Cerro San Felipe, *E. W. Nelson*, no. 1146; also in hb. U. S. Nat. Mus. nos. 1166 and 1076; west slope of Mount Zempoaltepec, 2300–2440 m. alt., *E. W. Nelson*, no. 559, hb. U. S. Nat. Mus.; near Reyes, *E. W. Nelson*, no. 1735, hb. U. S. Nat. Mus. COAHUILA: 9.6 km. east of Saltillo, *E. Palmer*, no. 991, April, 1880; San Lorenzo Cañon, *E. Palmer*, no. 415, coll. of 1904. HIDALGO: Ixmiquilpan, *C. A. Purpus*, no. 1411; Sierra de Pachuca, *Rose & Hay*, no. 5582. PUEBLA: San Martin, *E. W. Nelson*, no. 8, and on same sheet without separate numbers is a specimen from Mexico and another from Vera Cruz, hb. U. S. Nat. Mus.; in plaza near Calchicomula, *Rose & Hay*, no. 5807; near town of Puebla, *Lucius C. Smith*, no. 905. JALISCO: Guadalajara, *E. Palmer*, no. 265, July, 1886; *C. G. Pringle*, no. 8763. MICHOACAN: north slope of Mount Patamban, 2897–3355 m. alt., *E. W. Nelson*, no. 6587; *C. & E. Seler*, no. 1281, SAN LUIS POTOSI: *E. Palmer*, no. 724, coll. of 1898; no. 88, coll. of 1902; *Parry & Palmer*, no. 692, coll. of 1878. MORELOS: Tres Marias Mountains, *C. G. Pringle*, no. 11, 647. SONORA: Huchuerachi, 1220 m. alt., *C. V. Hartman*, no. 299, and *F. E. Lloyd*, no. 436 (Lamholtz Exped.). VERA CRUZ: Mount Orizaba, 2745 m. alt., *H. E. Seaton*, no. 160; Boca del Monte, *E. W. Nelson*, no. 194, hb. U. S. Nat. Mus. STATE OF MEXICO: Mount Popocatepetl, *Rose & Hay*, no. 6063; foot-hills of Mount Ixtaccihuatl, *Chas. C. Deam*, no. 19; Cholula, *Chas. C. Deam*, no. 85.

41. *C. CANESCENS* Benth., suffruticosa ramosa canescenti-hispida; foliis linearibus lanceolatisve basi dilatato-amplexicaulibus, floralibus latioribus acutis, summis rarius apice coloratis; spicis confertis; calyce elongato hinc fisso, postice obtuso vel acute 2–4-dentato, corollae galea elongata, labii lobis brevibus obtusis vel acutiusculis. — Benth. in DC. Prodr. x. 533 (1846); Seem. Bot. Voy. Herald, 323; Hemsl. l. c. 460. — It is doubtful if this species can be maintained as distinct from the preceding, though certainly *Hartweg*, no. 191 (*C. tenuiflora*), and *Andrieux*, no. 156 (*C. canescens*), specimens cited by Bentham and represented in hb. Gray, are dissimilar, as is indicated in the above key. The flowers seem alike in the dried specimens, though perhaps those of *C. canescens* spread more widely from the flowering axis. The following are in hb. Gray, — SAN LUIS POTOSI: *Parry & Palmer*, no. 688, coll. of 1878; in the mountains of San Miguelito, *Schaffner*, no. 740, also near town of San Luis Potosi, no. 739. OAXACA: Cerro San Felipe, *C. Conzatti*, no. 689½, April, 1898; Huauchilla, Nochistlan, alt. 2000 m.,

*Conzatti & González*, no. 1225; San Juan del Estado, 1920 m. alt., *Lucius C. Smith*, no. 407. CHIHUAHUA: near Batopilas, *E. A. Goldman*, no. 195. DURANGO: vicinity of city, *E. Palmer*, nos. 114 and 648, coll. of 1896. VERA CRUZ: Orizaba, *Botteri*, nos. 590 and 431. STATE OF MEXICO: Tacubaya, *W. Schumann*, no. 1013; near Toluca, *G. Andrieux*, no. 156; Vallée de Mexico, *E. Bourgeau*, no. 104. GUANAJUATO: Guanajuato, *A. Dugès*, no. 388. N. W. Mexico, *Seemann*: Mexico without locality, *Dr. J. Gregg*, nos. 434 and 610.

42. *C. xylorrhiza*, n. sp., perennis, investa pilis albis crispis simplicibus vel basi furcatis; radice lignea crassa; caulibus pluribus basi ramosis, supra simplicibus rectis 1.5–2 dm. altis (gracilibus in specimine viso sed anni praecedentis caulibus ligneis grandis); foliis lanceolatis trinerviis 2–3 cm. longis, 2–3 mm. latis, apice acutis, basi obscure auriculatis; floribus breve pedicellatis divaricatis in spicis brevibus confertis, bracteis floribus brevioribus similibus foliis; calyce 2.5 cm. longo, basi ventricosus, laciniis bidentatis; corolla 3.5 cm. longa, galea exserta 5–15 mm., dorso glandulari-pubescenti; labio inferiore protuberanti acuminato-tridentato, sinubus inter dentes angustis crassis, similibus glandibus; stylo filiformi exserto, stigmatibus integro clavato; capsula oblonga, basi et apice acuminata, compressa, 1.5 cm. longa. — COAHUILA: Sierra Encarnación, 28 July, 1896, *E. W. Nelson*, no. 3895 (type, in hb. Gray). This species is related to *C. tenuiflora*, differing in the peculiar pubescence, the habit of growth, and fewer-flowered more capitate spikes.

43. *C. scabridula*, n. sp., suffruticosa scabriduli-puberulens ramosa alta; foliis lineari-lanceolatis apice acutis vel obtusis basi rotundatis vel rarissime auriculatis, trinerviis 2–3 cm. longis, 2–5 mm. latis; foliis floralibus latioribus et brevioribus; floribus breve pedicellatis, junioribus in spicis capitatis, senioribus in racemis; pedicellis filiformibus 3–5 mm. longis; bracteis supremis attenuatis apice coccineis; calyce basi obliquo tubuloso 3 cm. longo, in altitudinem postice 6 mm., antice 2 cm. fisso, segmentis acuminato-laciniatis glandulari-puberulentis, superiore parte coccinea, inferiore psittacina; corollae galea exserta 15 mm., obtusa sed lateraliter emarginata, 2 cm. longa, apice 2 mm. lata, basi 5 mm.; labio inferiore atro-rubro exserto et protuberanti 1 mm., laciniis lineari-acuminatis 1 mm. longis, exterioribus divaricatis, media incurvata, sinubus crassis; stigmata fere exserto clavato; ovario ovato-acuminato. — DURANGO: Tejaman, August, 1906, *E. Palmer*, no. 468 (type, in hb. Gray). Dr. Palmer notes this as one of the showiest of plants, with flowers bright yellow and scarlet. It grows in compact masses on stony hills among other plants, but is not common. The stems are brittle and the plant is not eaten by



animals. It is related to *C. linariaefolia*, but differs in its shorter tri-nerved leaves, its pubescence, its pedicellate flowers, and the peculiar lower lip of the corolla, which stands out like a small shelf and must be very conspicuous in the living flower, its dark red contrasting strongly with the light red and yellowish green of the other parts of the flower and bracts.

44. *C. LAXA* Gray, herbacea cinereo-pubescent; caulibus e radice perennis subdiffusis ramosis gracilibus; foliis tenuibus scabridis linearilanceolatis integerrimis basi haud dilatatis, floralibus calyce brevioribus rubro-coloratis; floribus paucis confertis breviter pedicellatis; calyce rubello antice profundius postice breviter fisso, dentibus brevibus obtusis; corollae galea magna, lobis labii inferioris brevissimis obtusis. — Gray in Torr. Bot. Mex. Bound. Surv. 119 (1859); Gray, Synop. Fl. N. Am. ii. pt. 1, 296; Hemsl. l. c. 461. — SONORA: mountain sides near Santa Cruz, Wright, no. 1490; Los Pinitos, altitude 1830 m., *C. V. Hartman*, no. 142 (Lumholtz Exped.). DURANGO: San Ramon, *E. Palmer*, no. 59, coll. of 1906. ARIZONA: Santa Catalina Mts., *J. G. Lemmon*, no. 264. There is an abnormal specimen collected at Alamos in 1890, by *E. Palmer*, no. 366.

45. *C. STENOPHYLLA* Jones, suffruticosa 6 dm. alta ramosissima, ramulis rectis subcinereis; foliis subfiliformibus obtusis 2–5 cm. longis; floribus rectis in spicis capitatis demum elongatis; bracteis oblongis acutis nervatis integris vel laciniatis, laciniis lateralibus paucis linearibus brevibus, media lata; calyce 2 cm. longo, postice in altitudinem 5 mm. fisso, segmentis irregulariter acuminatis vel laciniatis; corolla calycem superanti 3 mm., galea basi 3 mm. lata, apice 1 mm., dorso glandulosa; labio inferiore triplicato, lobis subulatis incurvatis 1 mm. longis; capsula oblongo-ovata 1.5 cm. longa. — Contributions to Western Botany, xii. 67 (1908). The type was collected at Garcia and in San Diego cañon, Sierra Madre, CHIHUAHUA, September, 1903 (hb. Marcus E. Jones). The specimens in hb. Gray are from Colonia Garcia, altitude 2287 m., *Townsend & Barber*, no. 209, also *E. W. Nelson*, no. 6210 a, in part. According to Marcus E. Jones, the flowers have a green back and red face. At almost all the leaf-axils there are small sterile branchlets slender and very leafy.

46. *C. LONGIBRACTEATA* Mart. & Gal., "caule fruticoso erecto glabriusculo, foliis linearibus acuminatis elongatis 3-nerviis subglabris, floralibus lanceolato-linearibus flore sublongioribus, superioribus vel bracteis obovato-lanceolatis apice fimbriatis, floribus longepedunculatis racemoso-spicatis; calyce tubuloso-inflato glabriusculo, corolla calycem longe excedente apice pilosa. — Flores 1.5 pollicares, pedunculi semipollicares. — *A Castilleja integrifolia* L., cui affinis praesertim

bracteis majoribus pedunculisque longioribus differt. Dans les bois de Juquila del Sur (côte pacifique d'Oaxaca) à 5000 pieds, à Talea et dans le Rincon (Cordill. orientale d'Oaxaca), de 3000 à 4000 pieds. Fl. rouges. Septembre."—Bull. Acad. Brux. xii. pt. 2, 28 (1845); Walp. Rep. vi. 651; Hemsl. l.c. 461. The following specimens are in hb. Gray,—Mexico, *Dr. Coulter*, no. 1353. OAXACA: Sierra de San Felipe, altitude 1830 m., *C. G. Pringle*, no. 4817; hills, San Felipe del Agua, altitude 1750 m., *Conzatti*, no. 570. In hb. U. S. Nat. Mus., Valley of Oaxaca, altitude 1830–2287 m., *E. W. Nelson*, no. 1194; 29 km. south-west of City of Oaxaca, altitude 2287–2897 m., *E. W. Nelson*, no. 1459, as to material in hb. Gray.

47. *C. INTEGRIFOLIA* Linn. f., suffruticosa ramosa glabriuscula vel tenuiter canescenti-hispidula; foliis linearibus integris basi vix dilatatis, floralibus paulo latioribus apice raro coloratis; racemo secundo; calyce elongato hinc fisso postice brevissime 2–4-dentato; corollae galea elongata glabriuscula, labii lobis brevissimis acutis.—Linn. f. Suppl. 293 (1781); Smith, Icon. Ined. 39; Benth. in DC. Prodr. x. 533; Mart. & Gal. l. c. 27; Hemsl. l. c. 461. The species was founded upon specimens collected by *Mutis* in Nova Granata and is also a native of Central America and Mexico. The flowers are conspicuous, falcately spreading, and turning black in drying. The calyx is nearly 2 cm. long and the corolla exerted about 5 cm.—CHIAPAS: *Ghiesbrecht*, nos. 152, 654, and 655. GUATEMALA: *Hyde & Lux*, no. 3099 (distrib. of J. Donnell Smith); *Sutton Hayes*; between Jacaltenango and San Martin, altitude 1670–2135 m., *E. W. Nelson*, no. 3609. OAXACA: between Juquila and Nopala, altitude 1372–2135 m., *E. W. Nelson*, no. 2426. NUEVO LEON: near Monterey, *C. G. Pringle*, no. 1951.

48. *C. PATRIOTICA* Fernald, simplex vel ramosa, 3–5.5 dm. alta; caulibus piloso-hirsutis vel glabrescentibus; foliis tenuibus hispidulis 3–5 cm. longis lineari-lanceolatis vel pinnatisectis, laciniis 2–6 lineari-lanceolatis; floribus racemosis; pedicellis ca. 1 cm. longis; bracteis foliis similibus minoribus et minus laciniatis; calyce tubuloso 3–4 cm. longo piloso-puberulo rubro viridi et albescenti; corolla 4.5–5.25 cm. longa viridi et albescenti dorso; galea 2.75–3 cm. longa exserta; labio inferiore viridi protuberanti ca. 3 mm., lobis lanceolatis; capsula oblongo-acuminata 1.5 cm. longa.—Fernald in Proc. Am. Acad. xl. 56 (1904).—CHIHUAHUA: near Colonia Garcia, altitude 2310 m., *Townsend & Barber*, no. 156; Cumbre, *E. Palmer*, no. 363, coll. of 1885; Mapula Mts., altitude 2200 m., and cool slopes of the Sierra Madre *C. G. Pringle*, nos. 1154, 1350 (type, in hb. Gray); Colonia Juarez, *E. W. Nelson*, no. 6062. DURANGO: barranca below Sandia Station,

*C. G. Pringle*, no. 13,659; in hb. U. S. Nat. Mus., near La Providencia, altitude 1982–2440 m., *E. W. Nelson*, no. 4989; Sierra Madre, 45 km. north of Guanacevi, *E. W. Nelson*, no. 4766.

49. *C. PURPUSI* Brandegee, perennis suffruticosa hirsuta; caulibus multis 1 dm. altis simplicibus ex rhizomatibus longis ramosis; foliis inferioribus lineari-lanceolatis obtusis vel acutis, basi subattenuatis 1.5–2 cm. longis 3–4 mm. latis; foliis superioribus bracteisque trifidis, segmento medio longissimo; calyce antice profunde fisso, postice paulo, segmentis integris vel emarginatis; corolla 3.5 cm. longa exserta; galea tomentosa dorso viridi; labio inferiore brevissimo, dentibus 3 acuminatis, medio brevior. — *Zoe*, v. 181 (1905). — Mt. Ixtacihuatl, rocky slopes above timber-line, *C. A. Purpus*, nos. 320 (type), 1711 (both in hb. Univ. Calif., duplicates in hb. Gray). The bracts and calyx are more or less tinged with red, but the entire plant becomes black in drying. The leaves are rather thickly covered with loose spreading long white hairs, and some of the upper leaves are trifid.

50. *C. PECTINATA* Mart. & Gal., "fruticulosa pilosa; foliis pectinato-subpinnatis, laciniis linearibus distantibus elongatis 2–3-jugis, bracteis laciniato-pectinatis, floribus racemoso-spicatis, pedunculis et calycibus pilosis. — Folia pollicaria pectinato-laciniata, flores rubri similes floribus *Castillejæ integrifoliae* L.; sed pedunculati. — Affinis *Castillejæ laciniatæ* Hook. Dans les forêts de pins de la Cueva del Temascal, au pic d'Orizaba, de 9500 à 12,500 pieds (limites de la végétation phanérogame). Fl. rouge-vermillon. Août." — Bull. Acad. Brux. xii. pt. 2, 27 (1845); Walp. Rep. vi. 651; Hemsl. l. c. 462. — *C. Orizabæ* Benth. in DC. Prodr. x. 533, is founded partly on the same number (1074) in Galeotti's collection, also on *Linden*, no. 223. Bentham gives these additional characteristics under *C. Orizabæ*, — "canescenti-hispidula, foliis inferioribus integris linearibus sublanceolatisve, superioribus dilatatis incis, floralibus vix apice coloratis, racemo laxo, calyce elongato amplo hinc fisso postice obtuse 2–4-dentato, corollæ galea tubo suo multo longiore, labii lobis brevibus acuminatis. Habitus fere *C. integrifoliae* sed folia pleraque incisa lobis elongatis et flores multo majores. Calyx 15 lin. longus. Corollæ galea dorso villosa, calycem lineis 5–6 superans." In hb. Gray the species is represented by a doubtfully identified specimen collected in GUATEMALA: Volcan de Agua, Depart. Zacatepequez, altitude 3670 m., April, 1890, *John Donnell Smith*, no. 2146.

51. *C. FISSIFOLIA* Linn. f., herbacea quandoque suffruticosa; caulibus erectis parum ramosis foliosis pubescentibus; foliis sessilibus patentissimis, basi ovatis integris, apice pinnatifidis, laciniis patentibus obtusis fere alternis utrinque pubescentibus subtrinerviis; floribus versus apices

ramorum majorum axillaribus solitariis pedunculatis speciosis coccineis; bracteis propriis nullis; calyce tubuloso antice ultra medietatem longitudinaliter fisso, nervoso pubescenti colorato, basi subventricosus, superne compresso; labio superiore longissimo incurvo, apice emarginato dorso pubescenti; inferiore brevissimo trifido, laciniis acutis; sinibus similibus glandulis; stigmatibus obtusis; capsula ovato-acuminata compressa. — Linn. f. Suppl. 293 (1781); Benth. l. c. 533; Smith, Leon. Ined. t. 40; Hemsl. l. c. 460. — This species can scarcely be considered Mexican, as it has so far been collected only in South and Central America. There are no specimens in hb. Gray from Mexico or Central America.

52. *C. IRASUENSIS* Oerst., "suffruticosa glabra, foliis linearibus apice trifidis, lacinia intermedia subtrifida, racemo elongato laxo, calyce elongato hinc fisso postice bilobo, lobis retusis, corollae galea tubo subduplo longiore labii lobis brevissimis acuminatis. — Suffrutex erectus, ramosus, 1-2 pedalis. Caulis ramique teretes, glabri, nitiduli. Folia alterna, sessilia, amplexicaulia, linearia, supra medium trifida, glabra, 8-14 lin. longa, lobis linearibus obtusiusculis, intermedio majore sub 3-4-fido. Folia floralia indivisa, cuneata, apice obtusa, 8 lin. longa, trinervia, rubicunda, glabra. Flores pedicellati, 15 lin. longi. Pedicelli 2 lin. longi, villiusculi demum glabriusculi. Calyx elongatus, tubulosus, compressus, tomentosus, fuscus margine flavescens, hinc fissus inde bilobus, 6-7 lin. longus, lobis rotundatis vel retusis. Corolla bilabiata subrecta, calyce tres lineas longior, antice virescens postice rubicunda, labio superiore (galea) apice retuso, inferiore 3-fido, laciniis acuminatis incurvis. Stamina exserta, anticis corolla lineam longioribus, posticis ei aequilongis. Stylus exsertus. Stigma capitatum. Capsula ovato-oblonga, breviter acuminata, fusca, glabra calyce demum tecta, 6 lin. longa. Semina oblonga, numerosa, minutissima, testa laxa, diaphana, reticulata." — Oerst. in Vidensk. Meddel. 1853, p. 27; Hemsl. l. c. 461. — COSTA RICA: alpine region, Volcano Irasu, altitude 2745-3050 m., Oersted, part of type material in hb. Gray; same locality, John Donnell Smith, no. 4901; Volcan de Turrialba, Pittier, no. 13,079 (hb. Nat. Costa Rica, distr. by John Donnell Smith). COLUMBIA: Santa Marta, H.H. Smith, no. 1387.

53. *C. TEPEINOCALDA* Loesen., "humilis atque procumbens, tota planta tantum circ. 6-9 cm. alta; ramulis subglabris vel hirtis; foliis parvis sessilibus linearibus vel lineari-lanceolatis integris, acutis vel subacutis, glabris vel pulvereo-puberulis, uninerviis vel obsolete trinerviis, 6-13 mm. longis, circ. 1-2 mm. latis; bracteis longioribus usque 17 mm. longis et latioribus usque 3 mm. latis, summis ipsis plerumque utrinque uni- vel bifimbriatis, fimbriis lateralibus usque 6 mm. longis; pedicellis

circ. 3 mm. longis vel brevioribus; calyce mediam tantum corollam paullulo superante circ. 2.2 cm. longo, flavo et rubello, antice profunde fissio, ad circ. 1/3 altitud. connato, postice minute exciso, rotundato; corolla flava et rubella e calycis fissura longe exserta, 3.5–3.7 cm. longo, tubo circ. 1.5 cm. longo, galea elongata, labii lobis acutis, naviculari-subcorniformibus vix 1 mm. longis.

"Var.  $\alpha$ . SUBGLABRA Loesen.; ramulis subglabris, foliis glabris. Hab. in GUATEMALA, in dept. Quezaltenango in pratis alpinis supra Totonicapam in 3000 m. altitud.: Sel. n. 2357. — Flor.: Sept.

"Var.  $\beta$ . HIRTA Loesen.; ramulis hirtis, foliis pulvereo-puberulis. Hab. in GUATEMALA, in dept. eodem in pratis alpinis ad Zihà in 2840 m. altitud.: Sel. n. 2933. — Flor.: Jun." Loesen. in Bull. Herb. Boiss. ser. 2, iii. 285 (1903).

54. C. KATAKYPTUSA Loesen., "humilis atque procumbens, tantum circ. 9 cm. alta; ramulis dense hirtis; foliis parvulis, sessilibus, linearibus vel superioribus lineari-lanceolatis, integris, acutiusculis, pulvereo-puberulis, obsolete uni-trinerviis, 8–20 mm. longis, vix 1–4 mm. latis, inferioribus angustioribus brevioribus, superioribus longioribus praecipueque basi latioribus sensim in bracteas transformatas, bracteis summis etiam maioribus, usque 23 mm. longis, et 4 mm. latis, margine utrinque 1–2-fimbriatis, fimbriis ipsis tantum usque 4 mm. longis, linearibus, lamina igitur fimbriis additis tota circ. 10 mm. lata; pedicellis tantum vix 2 mm. longis; calyce circ. 2.5 cm. longo, postice minute atque etiam minus excisulo quam in praecedente, rotundato, corolla circ. 4 cm. longa, tubo circ. 1.7 cm. longo, labii lobis obtusis vel subobtusis, extrinsecus pilosis; cetera ut in praecedente. — Habitat in GUATEMALA: in dept. Huehuetenango in pratis et silvestribus in jugo montium inter Todos los Santos et Chiantla, in 3000 m. altitud.: Sel. n. 2750. — Flor.: Sept." Loesen. in Bull. Herb. Boiss. ser. 2, iii. 286.



## II. A REVISION OF THE GENUS RUMFORDIA.

BY B. L. ROBINSON.

The genus *Rumfordia*, originally described by the eldest De Candolle and dedicated to Count Rumford, was founded upon a single species, *R. floribunda*, a showy-flowered shrub from the uplands of central and southern Mexico. The genus was for more than fifty years believed to be monotypic, but in 1892 Mr. T. S. Brandegee published the description of a second and very distinct species, which he had discovered in the mountains of southern Lower California. From 1903 to 1905 Dr. Greenman amplified the records of the genus by characterizing two species from Costa Rica and a pubescent form of the original *R. floribunda*. As two more new species of *Rumfordia* have now been found in a very interesting collection of plants secured by the late E. Langlassé, it seems worth while to present here a résumé of the genus as far as it is known to date. The group is notable for its entire freedom from synonymy and nomenclatorial difficulties. Of its members not one appears to have borne any other name than the one here recognized.

RUMFORDIA DC. (ad equitem clarissimum *Benjaminem Thompson* comitem de *Rumford* dedicata). — Capitula medioeria vel majuscula heterogama. Flosculi ♀ 6–20 liguliferi fertiles; ligulis ellipticis vel oblongis vel linearibus tenuibus et flavis vel aetate indurescentibus et albicantibus nunc simplicibus nunc obscure bilabiatis. Flosculi disci ca. 10 vel multo numerosiores ♂ fertiles, corollis tubulosis flavis, tubo proprio gracili pubescenti quam fauces subcylindrici glabriusculi distincte brevioris vel eos subaequantis, dentibus limbi 5 brevibus deltoideis. Achaenia obovoidea modice compressa calva glabra conformia. Involucrum duplex, squamis exterioribus herbaceis ovatis vel ellipticis vel oblongo-lanceolatis laxè patentibus, squamis interioribus multo minoribus ovatis vel lanceolatis paleiformibus erectis cucullatis achaenia flosculorum exteriorum amplexantibus. Receptaculum plano-convexum paleiferum. — Prod. v. 549 (1836); Deless. Ic. Sel. iv. t. 30 (1839); Benth. et Hook. f. Gen. ii. 359 (1873); Hemsl. Biol. Cent.-Am. Bot. ii. (1881); Baill. Hist. Pl. viii. 215 (1886); Hoffm. in Eng. et Prantl, Nat. Pflanzenf. iv. Ab. 5, 230 (1890); Brandegee, Zoe, iii. 241, t. 23 (1892); Greenman, Proc. Am. Acad. xxxix. 99 (1903), xl. 38 (1904), xli. 261 (1905). — Frutices vel rarius herbae elatae perennes, caulis

saepe fistulosis laxe ramosis. Folia opposita saepissime ovata vel rhomboideo-lanceolata nunc petiolata nunc connata et perfoliata, petiolo plerumque cuneato-alato, lamina serrata vel denticulata nunc margine rotundata nunc utriusque latere unilobata vel uniangulata. Capitula in paniculam laxiusculam ovoideam vel planiusculam disposita.

Species hujusque cognitae 6, quarum tres mexicanae sunt, una in montibus Californiae inferioris inventa est, ceterae reipublicae Costae Ricae incolae sunt.

*Clavis specierum.*

- a. Folia utriusque latere regulariter rotundata nec lobata nec angulata, b.
  - b. Flosculi disci ca. 12. Involucri squamae exteriores obovati-spatulatae integerrimae ca. 6 mm. longae. Folia omnino disjuncta vel obscure angustissimeque connata. . . . . 1. *R. floribunda*.
  - b. Flosculi disci ca. 100. Involucri squamae ovati-oblongis vel ellipticis ca. 15 mm. longae, aliae integrae aliae 2-3-dentatae. Folia late conspicueque connati-perfoliata. . . . . 2. *R. connata*.
- a. Folia utriusque latere unilobata vel uniangulata subhastatifor-mi-rhomboides, c.
  - c. Involucrum exterius puberulum solum vel quasi pulverulentum, d.
    - d. Pedicelli glanduloso-puberuli. Ligulae 10-12 mm. longae conspicue exsertae. Petioli veri breves 3-5 mm. solum longi vix alati.
      - 3. *R. attenuata*.
    - d. Pedicelli puberuli sed eglandulosi. Ligulae 5 mm. longae ex involucre vix exsertae. Petioli per totam longitudinem conspicue alati 3-4 cm. longi. . . . . 4. *R. aragonensis*.
  - c. Involucrum exterius laxe pubescens, pilis albidis moniliformibus modice longis, e.
    - e. Ligulae conspicuae 16 mm. longae valde exsertae. Petioli basin versus graciles exalati. . . . . 5. *R. oreopola*.
    - e. Ligulae parvae inconspicuae involucrum non superantes. Petioli per totam longitudinem alati. . . . . 6. *R. polymnioides*.

1. *R. FLORIBUNDA* DC. (*Palo gogo* mexicanorum) fruticosa elata speciosa; foliis ovatis serratis breviter acuminatis firmiusculis utrinque glabriusculis 7-16 cm. longis 5-12 cm. latis supra basin conspicue 3-nerviis basi in petiolum abrupte contractis deinde cuneatis; panicula ovoidea 1-2 dm. diametro multicapitulata oppositiramea, bracteis primariis foliaceis, secundariis multo minoribus quam ramuli pedicellique saepius brevioribus; involucri squamis exterioribus 5 patentibus obovato-spatulatis striato-venosis integerrimis obtusis 6 mm. longis utrinque granuloso-puberulis, squamis interioribus cucullato-cymbiformibus 4-5 mm. longis acutiusculis dorso glanduloso-scaberrimis; flosculis ♀ 7-11, tubo proprio gracili 2 mm. longo pubescenti, ligula elliptica striato-nervia ca. 12 mm. longa 8 mm. lata apice breviter obtuseque 2-3-dentata maturitate durescenti et persistenti; flosculis disci 10-14, corollis

flavis, tubo proprio gracili 1.3 mm. longo pubescenti, faucibus cylindricis 3 mm. longis glabriusculis; achaeniis nigrescentibus compressiusculis obovatis striatulo-sulcatis 2.5 mm. longis. — Prod. v. 550 (1836); Deless. Ic. Sel. iv. t. 30 (1839); Hemsl. Biol. Cent.-Am. Bot. ii. 157 (1881). — Locis montanis mexicanis praecipue in terra argillacea prope rivulis altitudine 1500–2500 m. haud rara. JALISCO: Nelson, nn. 4024, 4172. MICHOACAN: Pringle, n. 3940; Nelson, nn. 6570, 6889. MORELOS: Pringle, nn. 9955, 13,902, 13,086 (infelicitate sub nomine *Trigonospermum floribundum* errore distributa). OAXACA: Ghiesbreght, anno 1842. Sierra Madre inter Michoacan et Guerrero, Langlassé, nn. 83, 801.

Forma PUBESCENS Greenman, foliis subtus saltim nervos versim permanenter laxequae floccoso-lanosis; ligulis quam eae formae typicae paulo longioribus etiam ad 2 cm. attingentibus. — Proc. Am. Acad. xli. 261 (1905). — Cerro de San Felipe, alt. 2500 m., Conzatti, n. 30.

2. *R. CONNATA* Brandege, herbacea perennis multicaulis 1–2 m. alta; caulibus teretibus striatulis pubescentibus apicem versus trichotomoramosis; foliis ovati-lanceolatis regulariter serratis gradatim acutatis basi paulo angustatis late perfoliato-connatis 5–9 cm. longis 2–4 cm. latis utrinque pubescentibus; capitulis laxae paniculatis; pedicellis 3–6 cm. longis saepissime nutantibus glanduloso-pubescentibus; squamis involucri exterioribus 5 inaequalibus ovati-oblongis vel ellipticis integris vel apice 2–3-dentatis ca. 13–16 mm. longis ca. 8 mm. latis utrinque laxae glanduloso-pubescentibus, squamis interioribus tenuibus pallide viridibus ovato-lanceolatis conduplicatis acutis 5–6 mm. longis dorso glanduloso-pubescentibus; flosculis ♀ ca. 19, ligulis saepissime bilabiatis, labio inferiore 1 cm. longo ca. 7-nervio 3–4 mm. lato apice 3-dentato, labio superiore e lobulis 1–2 lineari-oblongis saepe obscuris 1.7–2 mm. longis composito; flosculis disci numerosissimis (ca. 100), corollis 8 mm. longis, tubo proprio 2.5 mm. longo pubescenti, faucibus graciliter cylindricis 5.5 mm. longis; achaeniis valde immaturis glabris. — Zoe, iii. 241, t. 23 (1892). — In montibus prope capnum Sancti Lucae Californiae inferioris australis, Brandege.

3. *R. attenuata* Robinson, n. sp., verisimiliter fruticosa 2.5 m. alta glabriuscula; ramis trichotomis subteretibus fistulosis striato-angulatis, internodiis 1–1.5 dm. longis; foliis oppositis lanceolatis vel rhomboideo-lanceolatis tenuissimis breviter petiolatis 1.4–1.8 dm. longis 2–7 cm. latis longissime attenuatis in latere utroque 8-angulatis mucronulato-denticulatis vel subintegris utrinque viridibus subglabris, petiolo 3–5 mm. longo vix alato; capitibus 1.5–2 cm. diametro laxae cymoso-paniculatis; pedicellis gracilibus saepe nutantibus glanduloso-



pubescentibus; involucri squamis exterioribus 5 ovati-ellipticis acutis 8–10 mm. longis 3–4 mm. latis herbaceis glabriusculis margine albide granuloso-puberulis; squamis interioribus ovatis acuminatis cucullatis dorso breviter hispidulis; flosculis ♀ ca. 6–8, ligulis lineari-oblongis 10–12 mm. longis flavis conspicue exsertis et patentibus; corollis disci hispidulis 6 mm. longis, tubo gracili fauces cylindricos subaequanti; achaeniis glabris. — In terra humo pingui montium Sierra Madre inter Michoacan et Guerrero, alt. 1750 m., 26 Apr. 1899, *E. Langlassé*, n. 800 (specimine typico in hb. Grayano conservato).

4. *R. ARAGONENSIS* Greenman, verisimiliter fruticosa; caulibus teretibus fistulosis; foliis rhomboideo-ovatis mucronulato-denticulatis membranaceis supra glabriusculis subtus sparse pubescentibus ca. 1.2 dm. longis 9–10 cm. latis latere utroque unilobatis vel uniangulatis basi ad petiolum per totam longitudinem alatum 3–4 cm. longum angustatis; foliis supremis ovati-lanceolatis caudato-acuminatis non angulatis; panicula planiuscula laxa; involucri squamis exterioribus 5–6 ovatis acuminatis venosis 1.6 cm. longis 7–8 mm. latis tenuibus inconspicue puberulis, squamis interioribus ovatis acuminatis dorso breviter glanduloso-hispidulis 5 mm. longis; ligulis linearibus tenuibus 5 mm. solum longis 0.8 mm. latis flavis, tubo 2 mm. longo pubescenti; flosculi disci 20–30, corollis 5–6 mm. longis, tubo proprio gracili pubescenti fauces subcylindricos subaequanti basin versus bulboso-ampliato; achaeniis obovatis nigrescentibus nitidis 2 mm. longis. — *Proc. Am. Acad.* xl. 38 (1904). — *Arbusculetis* prope Aragon, Turrialba, Costa Rica, alt. 630 m., *Pittier*, n. 13,246.

5. *R. oreopola* Robinson, n. sp., verisimiliter fruticosa 3 m. alta; ramis trichotomis subteretibus fistulosis glabriusculis purpurascentibus; foliis oppositis ovatis caudato-acuminatis serrulatis ca. 1 dm. longis ca. 7 cm. latis a loco paulo supra basin 3-nervatis cum dente unico arcuato acuminato in latere utroque instructis utrinque viridibus inconspicue sparseque puberulis basi rotundatis deinde cuneatis, petiolo proprio brevissimo obcompresso margine lanoso-ciliato; capitibus modice numerosis in paniculam laxam folioso-bracteatum dispositis 3–3.5 cm. diametro (ligulis inclusis); ramulis paniculae glanduloso-tomentosis; involucri squamis exterioribus viridibus plerumque 5 lanceolatis attenuatis 1.3–1.9 cm. longis 6 mm. latis tenuibus subtrinerviis laxe glanduloso-pilosis, pilis albidis longiusculis moniliformibus; flosculis ♀ ca. 10, ligulis anguste oblongis 1.6 cm. longis 4 mm. latis flavis late patentibus; flosculis disci numerosis flavis, corollae tubo proprio gracili fauces cylindricos vix aequanti pilosiusculo basin versus bulboso ampliato, dentibus limbi brevibus deltoideis; achaeniis obovoideis atrobrunneis glaberrimis lucidulis. — In terra argillacea summorum

montium Sierra Madre inter Michoacan et Guerrero, alt. 2250 m., 16 Feb. 1899, *E. Langlassé*, n. 878 (specimine typico in hb. Grayano conservato).

6. *R. POLYMNIODES* Greenman, verisimiliter herbacea vel subherbacea; caule purpurascenti striatulo-angulato crispe albido-pubescenti fistuloso; foliis oppositis late ovatis acute acuminatis 1-1.2 dm. longis ca. 8 cm. latis 3-nerviis reticulato-venosis mucronato-denticulatis supra viridibus breviter pubescentibus subtus pallidioribus griseo-tomentellis et resinoso-atomiferis basi primo abrupte deinde cuneate ad petiolum 2-3 cm. longum per totam longitudinem alatum angustatis; capitulis in paniculam laxam planiusculam 2-3 dm. diametro dispositis, pedicellis griseo-hirsutis gracilibus 1-3 cm. longis saepe nutantibus; involucris squamis exterioribus 5 late ovatis acutis herbaceis 3-nerviis et reticulato-venosis extus laxe griseo-hirsutis intus paulo pallidioribus glaberrimis margine albido-puberulis vel -pulverulis, squamis interioribus linearibus conduplicatis attenuatis hispidulis; flosculis ♀ ca. 15, ligulis minimis, tubo gracili hispido ca. 3 mm. longo, lamina oblonga ca. 4 mm. longa 1.8 mm. lata apice 3-lobata flava; flosculis disci ca. 80, corolla flava, tubo proprio hispidulo 3 mm. longo basin versus non ampliato fauces cylindricos aequanti; achaeniis laevibus pallide brunneis oblique obovatis modice compressis plus minusve 4-gonis. — Proc. Am. Acad. xxxix. 99 (1903). — In agris ubi colitur *Zea Mais*, Copey, Costa Rica, alt. 1800 m., Apr. 1898, *Tonduz*, n. 11,947.

III. A SYNOPSIS OF THE AMERICAN SPECIES OF *LITSEA*.

BY HARLEY HARRIS BARTLETT.

The following synopsis of the American species of *Litsea* includes the six species recognized by Mez<sup>1</sup> in 1889, together with five heretofore undescribed species from Mexico and Central America. No attempt has been made to cite full synonymy, nor, with one exception, to re-describe species recognized by Mez, hence this paper may be considered as supplementary to his treatment of the genus.

For the loan of valuable Central American material, without which the new species from Costa Rica must have remained undescribed, I am indebted to Captain John Donnell Smith. Except for the specimens from his herbarium, the *exsiccatæ* cited are all at the Gray Herbarium.

Folia decidua. . . . . 1. *L. geniculata*.  
Folia persistentia.

Inflorescentiae plerumque corymbosae, rarius paniculatae.

Folia subtus glabra.

Folia basi rotundata vel subcordata.

Pedicelli quam flores multo longiores; inflorescentiae fere omnes in paniculam terminalem dispositae . . . . . 2. *L. pedicellata*.

Pedicelli quam flores breviores; inflorescentiae non modo terminales sed etiam in axillis foliorum mediis corymbosae. 3. *L. Pringlei*.

Folia basi acuta. . . . . 4. *L. glaucescens*.

Folia subtus pubescentia.

Folia subtus plus minusve strigosa. . . . . 5. *L. guatemalensis*.

Folia subtus ochraceo-tomentosa. . . . . 6. *L. Neesiana*.

Inflorescentiae solitariae vel fasciculatae.

Folia basi acuta.

Folia subtus albescentia, molliter tomentosa. . . . . 7. *L. Orizabae*.

Folia glabra.

Folia plus quam 2 cm. lata.

Folia subtus glauca. . . . . (4) *L. glaucescens* var. *subsolitaria*.

Folia haud glauca. . . . . 8. *L. flavescens*.

Folia maxima 1.5 cm. lata. . . . . 9. *L. Schaffneri*.

Folia basi subcordata vel rotundata.

Folia orbiculari-ovata, apice obtusa. . . . . 10. *L. parvifolia*.

Folia ovato-lanceolata, apice acuta. . . . . 11. *L. novoleontis*.

<sup>1</sup> Carl Mez, *Lauraceae Americanae monographice descriptae*. Jahrbuch des königlichen botanischen Gartens und des botanischen Museums zu Berlin. Band V, 1889.

1. *LITSEA GENICULATA* (Walt.) Benth. & Hook. Mez says of this species: "Hab. in paludosis a Virginia ad Floridam." There seem to be no specimens in American herbaria from further north than North Carolina. Perhaps the reference to Virginia is merely traditional, coming from the name of the work (Gronovius's *Flora Virginica*) in which this shrub was first described, as "*LAURUS foliis lanceolatis enerviis annuis*."

2. *Litsea pedicellata*, n. sp. Frutex 1-2 m. altus, ramulis furcatis glabris atro-bruneis. Folia glabra coriacea quam internodia duplo longiora, laminis orbiculari-ovatis utrinque albicantius viridibus 2-3 cm. longis 1.5-2 cm. latis, basi subcordatis, apice obtusis saepe mucronulatis, petiolis brunnescentibus 2-3 mm. longis. Inflorescentiae solum in axillis superioribus positae, plerumque in ramulis brevibus quorum terminalis paniculiformis est et foliis multo longior. Ramuli floriferi in gemmam parvam paucisquamosam terminantes. Pedunculi 6-9 mm. longi glabri prope apicem incrassatum glauci. Involucrum triflorum, squamis tribus late suborbicularibus deciduis, extus mox glabratibus intus pubescentibus. Flores ♂. Pedicelli quam in speciebus aliis mexicanis multo longiores, saepissime pedunculis fere aequilongi, superne glabrati, prope basin aequae quam in pedunculi apice, intra involucrum, albo-tomentelli. Perianthii tubus brevis; segmenta ovata apice obtusa. Stamina 10, filamentis glabris quam antheris brevioribus vel eis aequilongis, tribus interioribus biglanduliferis, glandulis majusculis convolutis. Antherae subrectangulares ad apicem versus valde angustatae. Loculi superiores inferioribus parviores, semper introrsum dehiscentes. Loculi inferiores staminum glanduliferorum sublateraliter, reliqui omnes introrsum, dehiscentes. Ovarium abortivum stylo apice breviter bilobato. Flores ♀ fructusque desunt in specimine authentico. — Mountains near Saltillo, State of Coahuila, Mexico, alt. 2135 m., 12 April, 1906, *Pringle*, no. 10,239 (type, in hb. Gray).

3. *Litsea Pringlei*, n. sp. Frutex 1-2 m. altus, ramulis gracilibus glabris olivaceis. Internodia plerumque quam folia duplo breviora. Folia glabra coriacea, laminis ovato-lanceolatis 4.5 cm. longis, supra basin 2 cm. latis, apice acutis saepe mucronulatis, basi subcordatis vel rotundatis; petiolis subolivaceis 5-7 mm. longis. Axillae foliorum omnes ramulos breves floriferos gerentes quorum terminalis haud paniculiformis est, sed aliis similis et foliis brevior. Ramuli floriferi, ut in *L. pedicellata*, apice gemmiferi. Pedunculi 6-9 mm. longi apice excepto glabri, ad apicem, intus in involuero, albido-hirtelli. Involucrum squamae 3 late suborbiculares deciduae, extus mox glabratae, intus pubescentes. Involucrum 3-vel 5-florum. Flores ♂. Pedicelli glabri inaequilongi, is floris medii longitudine perianthium saepe aequans, ei

florum lateralium aliquanto breviores. Perianthium tubo brevi, segmentis ovatis obtusis 3.2 mm. longis. Stamina 9, filamentis glabris antheris aequilongis vel eis paulo brevioribus, tribus interioribus biglanduliferis, glandulis majusculis convolutis. Antherae subrectangulares supra mediam paulo angustatae, apice emarginatae, loculis omnibus introrsum dehiscentibus. Ovarium abortivum. Flores ♀ quam masculi multo parviores. Perianthii tubus brevis; segmenta ovata obtusa 2.2 mm. longa. Staminodia 9, interiora 3 glandulifera, glandulis eis florum ♂ similibus. Stylus 1.2 mm. longus. Stigma discoideum subreniforme. Fructus ignotus. — On limestone ledges in the Sierra Madre above Monterey, State of Nuevo Leon, Mexico, alt. 850 m., 8 March, 1906, *Pringle*, no. 10,238 (type, in hb. Gray).

4. *LITSEA GLAUCESCENS* HBK. The following specimens, all from the State of Vera Cruz, are in the Gray Herbarium: Orizaba, *Botteri*, nos. 7 & 549 (error for 945 ?); Orizaba, 10 April, 1867, *Bilimek*, no. 359; hills near Jalapa, 16 April, 1899, *Pringle*, no. 8156. Since the Pringle specimen shows a strong habitual resemblance to *Litsea guatemalensis* Mez, it may represent the *Litsea glaucescens* var. *major* (Meissn.) Hemsl., from which Mez segregated his species.

Var. *SUBSOLITARIA* (Meissn.) Hemsl. — Mexico, 1848-'49, *Gregg*, no. 639. Leaves much more glaucous beneath than in the typical form. None of the inflorescences arranged in axillary corymbs.

5. *LITSEA GUATEMALENSIS* Mez. — MEXICO. Chiapas: "Bergwald zwischen Huitztan und Oxchuc," 11 March, 1896, *Caec. & Ed. Seler*. GUATEMALA. Department of Quiché: San Miguel Uspantan, alt. 2440 m., *Heyde & Lux*. Department of Zacatepequez: San Rafael, alt. 1980 m., *John Donnell Smith*, no. 1276.

6. *LITSEA NEESIANA* (Schauer) Hemsl. Nothing has been seen which answers to the description of this species. The plant cited by Mr. John Donnell Smith as *Litsea Neesiana* in his *Enumeratio Plantarum Guatemalensium* is *Litsea guatemalensis*.

7. *LITSEA ORIZABAE* (Mart. & Gal.) Mez. — State of Vera Cruz: Orizaba, alt. 2440 m., *Liebmann*, *Lauraceae* no. 65. This shrub has larger leaves than any other American member of the genus.

8. *Litsea flavescens*, n. sp. Arbuscula (fide cl. Tonduz), ramis numerosis ochraceo-brunneis, gemmis quam in speciebus *Litsea* ceteris majoribus. Folia coriacea glabra quam internodia 6-7-plo longiora, laminis griseo-viridibus, supra subnitidis, subtus pallidis, lanceolatis ca. 2 cm. latis 6.5 cm. longis, basi acutis, apice caudato-acutis mucronatis; petiolis 1-1.5 cm. longis. Petioli et costae laminarum mediae marginisque latiusculi flavescentes. Inflorescentiae solitariae vel fasciculatae. Pedunculi glabri 7-9 mm. longi. Involucrum 3-7-florum, squamis



deciduis 5 (vel 7) suborbicularibus, extus mox glabratibus, exterioribus apice acutiusculis, interioribus obtusis. *Flores* ♂. Pedicelli quam perianthium breviores vel idem aequantes, juventate tomentosi. Perianthii tubus fere nullus; segmenta 6 oblonga 3 mm. longa, basi paulo angustata. Stamina 9. Filamenta antheris paululo breviora, tria interiora biglandulifera, glandulis mediocribus varie lobatis sed non convolutis. Antherae oblongae ad apicem versus sensim angustatae, apice obtusae. Loculi antherarum omnes introrsum dehiscentes, sed ei inferiores seriei interioris aspectu sublaterales. Ovarium abortivum sine stylo. *Flores* ♀. Pedicelli quam perianthium longiores (is floris medii duplo longior), juventate tomentelli, aetate glabri incrassati. Perianthii tubus fere nullus; segmenta 6 anguste oblonga 2.4 mm. longa. Staminodia 9 graciliter spatuliforma, tria interiora biglandulifera, glandulis reniformibus ad hilum stipitatis. Stylus curvatus, stigmatibus disciformi irregulariter bilobo. Fructus immaturus ovoideus. — "Petit arbre, à port élané. Collines au dessus de Belmira près Santa Maria de Dota," Prov. San José, Costa Rica, alt. 1600 m., January, 1898, *Tonduz*, no. 11,638 (= no. 7352 of Mr. John Donnell Smith's distribution, type, in hb. Gray); Cuesta de Tarrazú, April, 1893, *Tonduz*, no. 7796. Vernacular name, "Lentisco." In all probability the Costa Rican specimens cited by Mez under *Litsea glaucescens* var. *subsolitaria* belong to this species, but unfortunately none of them are available for examination. *Litsea flavescens* may be distinguished from *L. glaucescens* not only by the characters given in the key, but also by its smaller flowers, tomentose pedicels, and obtuse, not emarginate, anthers.

9. *Litsea Schaffneri*, n. sp. Frutex 2-3 m. altus, ramulis gracilibus ochraceis; internodiis quam foliis 3-4-plo brevioribus. Folia glabra subtus glaucescentia, laminis anguste lanceolatis 6-14 mm. latis 2-5 cm. longis, basi acutis, apice acutis saepe mucronulatis; petioli 5-10 mm. longis. Inflorescentiae solitariae vel fasciculatae. Pedunculi nutantes 5-10 mm. longi glabri. Involucrum triflorum, squamis 5 suborbicularibus deciduis, duabus exterioribus mucronulatis extus glabratibus intus pubescentibus, interioribus obtusis utrinque pubescentibus. Pedicelli aut glabri aut tomentosi, inaequales, is floris medii aliis multo longior sed ipse perianthio brevior. *Flores* ♂. Tubus perianthii brevis; segmenta 6 ovata obtusa 3 mm. longa. Stamina 9. Filamenta antheris paulo breviora, tria interiora biglandulifera, glandulis valde stipitatis convolutis. Antherae subquadrangulares ad apicem versus paulo angustatae apice emarginatae, loculis omnibus introrsum dehiscentibus. Ovarium abortivum stylo brevi integro instructum. *Flores* ♀. Perianthii segmenta 9 ovata 2 mm. longa, exteriora 6 obtusa,

interiora tria (an staminodia?) acuta. Staminodia vera 9, ea seriei interioris biglandulifera, glandulis longe stipitatis. Stylus apice stigma disciforme laterahter gerens. Fructus (siccatu)s globosus, diametro usque ad 9 mm., niger (?). — This species constitutes a part of *Litsea parvifolia* (Hemsl.) Mez, as defined by Mez. The following specimens may be referred to it. San Luis Potosi: "in montibus San Miguelito," Schaffner, nos. 23 (type, in hb. Gray) & 710; Schaffner, nos. 431 & 463; Parry & Palmer, no. 798. State of Guanajuato: near Guanajuato, 1880, A. Dugès; Palmilla, Dept. Victoria, Berlandier, no. 2185. The last specimen is cited by Meissner in the original description of *Litsea glaucescens* var. *subsolitaria*, and is the same as the unnumbered plant cited by Hemsley as follows: "Vittoria to Tula (Berlandier)." The original label reads: "No. 2185 = 765. Arbuste 8-10 pds., d'les gorges ombragées — avant d'arriver à Palmilla. De Victoria à Tula, Nov. 1830." Probably the citation by Mez, under *Litsea glaucescens*, of "Berlandier n. 2158 (non vidi)" is an error for no. 2185, since there is no record of a "no. 2158" in the manuscript catalog of Berlandier's collections at the Gray Herbarium. According to the Parry & Palmer label, *Litsea Schaffneri* is the "Sacred Laurel" of the Mexicans. The Schaffner labels give "Laurel" as the vernacular name.

10. *LITSEA PARVIFOLIA* (Hemsl.) Mez, fruticosa, ramulis gracilibus juventate griseis puberulis, aetate ochraceo-brunneis glabris. Internodia foliis 2-3-plo breviora. Folia utrinque glabra, laminis orbiculato-ovatis vel maximis non raro ovatis 1.2-3 cm. latis 1.3-4 cm. longis, supra pallide viridibus, subtus albidis, basi cordatis vel subcordatis, apice plerumque rotundatis vel obtusis sed in foliis maximis saepe acutiusculis; petiolis 2-5 mm. longis ochraceo-olivaceis. Inflorescentiae axillares saepissime solitariae, raro fasciculatae. Pedunculi 5-9 mm. longi nutantes tenuissime puberuli. Involucrum 3(-5)-florum, squamis 3(-5) deciduis puberulis. Pedicelli subaequales floribus multo breviores albotomentosi. Flores ♂. Perianthii tubus perbrevis; segmenta 6 ovata obtusa. Stamina 9. Antherae late rectangulares filamentis longiores apice truncatae minute apiculatae, loculis omnibus introrsum dehiscentibus. Filamenta seriei staminum interioris glandulos brevistipitato convolutos gerentia. Ovarium abortivum stylo apice indistincte trilobo instructum. Flores ♀ non vidi. Fructus diametro 8-10 mm. globosus. — The original characterization of this species was probably drawn up from insufficient material. Mez's description includes at least two and perhaps even three species. Specimens examined: Mexico, 1848-'49, Gregg, no. 314; Saltillo, State of Coahuila, 15-30 April, 1898, Palmer, no. 68.

11. *Litsea novoleontis*, n. sp. Frutex 3-5 m. altus, ramulis

furcatis; internodiis quam foliis 3-4-plo brevioribus. Folia glabra vel glabrata, laminis ovato-lanceolatis 1.2-3 cm. latis 3-7 cm. longis, supra viridibus, subtus albido-viridibus, apice acuta saepe mucronulata, basi rotundata vel aetate subcordata; petiolis 4-7 mm. longis. Inflorescentiae in foliorum axillis solitariae vel fasciculatae. Pedunculi 5-7 mm. longi glabri, prope apicem glauci. Involucrum 3(-5)-florum, squamis saepissime 4 suborbicularibus, duabus exterioribus extus mox glabratis, apice mucronatis, interioribus utrinque pubescentibus, apice obtusis. Pedicelli ante florum anthesin tomentosi, maturitate fructus glabri valde incrassati pedunculis aequilongi, apice in discum diametro 5 mm. expansi. *Flores* ♂ (a gemmis nondum florescentibus descripti). Perianthii tubus brevis; segmenta 6 ovata apice obtusa. Stamina 9, interiorum 3 filamentis biglanduliferis. Loculi inferiores seriei antherarum interioris simulate lateraliter, ceteri introrsum, dehiscentes. Ovarium abortivum sine stylo. *Flores* ♀ non visi. Fructus (siccatus) niger usque ad 11 mm. diametro. Nucula 7 mm. diametro, cotyledonibus apice emarginatis corculum minutum includentibus. — Nuevo Leon: Sierra Madre near Monterey, *Pringle*, nos. 2837 (type, in hb. Gray) & 2078. San Luis Potosi: Alvarez, Sept. 1902, *Palmer*, no. 62; mountains, San Jose Pass, *Pringle*, no. 3146.

## IV. SOME UNDESCRIBED SPECIES OF MEXICAN PHANEROGAMS.

BY ALICE EASTWOOD.

*Aristolochia oaxacana*, n. sp., caulibus 1-paucis ex radice tuberosa prostratis tenuiter pilosissimis ramosis 1-2 dm. longis; foliis ovato-cordatis 2-4 cm. longis 2 cm. latis, apice acutis basi cordato-auriculatis ad petiolum brevem inter auriculas cuneate decurrentibus; floribus in axillis solitariis, bracteis obscuris ovatis ad basim pedunculi brevis insertis; calyce albo-purpureo unilabiato 3.5 cm. longo recto, tubo 12 mm. longo paulo constricto ad squamam interiorem infundibuliformem, limbo lineari antice ad tubum decurrenti; columna crasso-stipitata; antheris 5; stigmate peltato quinquelobato; ovario clavato pilosissimo; capsula turbinata quinquevalvata pilosa, apice dehiscenti. — OAXACA: Clajiaco, Galeotti, no. 214. This belongs to Sect. *Gymnolobus* Detre. in Ann. Sci. Nat. ser. 4, ii. 30, and is related to *C. cordata*, which, however, has a bilabiate calyx.

*Aristolochia cordata*, n. sp., caulibus plurimis ex radice longa flava, simplicibus vel ramosis prostratis gracilibus striatis tenuiter albo-pilosissimis; foliis subsecundis ovato-cordatis 2-4 cm. longis et latis, apice obtusis, basi cordatis, palmate quinquenerviis reticulatis, investis sparse supra, densiore subter cum pilis tenuissimis obscure articulatis adpressis simplicibus vel basi bifurcatis; petiolis 5-12 mm. longis pilosissimis; floribus solitariis in axillis, pedunculis laminatis striatis pilosissimis cum bractea ovata apice inserta; calyce bilabiato albo-purpureo exteriore piloso, interiore glabro; labio superiore cucullato 6-10 mm. longo, inferiore deflexo et conduplicato obo cordato 1 cm. lato; tubo flavo-lineato 11-12 mm. longo paulo constricto ad squamam interiorem infundibuliformem et sub os; columna sessili; antheris 5; stigmate peltato quinquelobato; ovario clavato pilosissimo basi ad pedicellum attenuata; capsula oblongo-turbinata quinquevalvata rugulosa, valvulis dorso crenati-alata, apice dehiscentibus. — DURANGO: Otinapa, July-August, 1906, E. Palmer, no. 431 (type, in hb. Gray). This belongs to Sect. *Gymnolobus* Detre. l. c. 30 and is distinguished from the other pentandrous species of the section by the remarkable two-lipped flower.

*Aristolochia Nelsonii*, n. sp., suffruticosa prostrata; caule prope basim ramoso velutino, ramis diffusis angulatis; foliis ovato-cordatis vel saepius auriculato-trilobatis, apice acuminatis, basi ad petiolum cuneate excurrentibus (auriculis rotundatis), palmate trinerviis et reticulatis, supra investis regulariter adpressis pilis basi minute pustulatis, subter subvelutinis; petiolis canaliculatis 1-2 cm. longis; floribus solitariis in axillis, pedunculis gracilibus 2 cm. longis, apice cum bractea sessili ovato-cordata acuminata 1 cm. longa 5-7 mm. lata; calycis limbo patulo peripherico longe caudato, basi purpureo-marginato, flavo circa os, cauda flava 4-5 cm. longa 2 mm. lata; tubo geniculato 4 mm. diametro; columna superne quinquelobata basi stipitata; antheris 5; ovario clavato albo-pilosissimo pedicellato. — OAXACA: San Geronimo, 61 m. altitude, July 1-5, 1895, *E. W. Nelson*, no. 2769 (type, in hb. Gray). This approaches *A. longicaudata* Watson, but differs in much broader limb, and in the form of the leaves. It belongs to Sect. *Gymnolobus* Detre. l. c. and to the pentandrous group.

*Passiflora platyneura*, n. sp., caulibus angulatis et striatis hispidis pilis albis uncinatis; cirrhis nullis; foliis infra mediam partem trilobatis 2-4 cm. longis 3-5.5 cm. latis, lobo medio oblongo-ovato lateralibus inaequaliter bilobatis, basi late reniformibus, lobis margine integris vel saepissime irregulariter dentatis, dentibus apice aristatis, nerviis supra filiformibus subter planis; petiolis ca. 1 cm. longis apice biglandulosis glandulis crasse stipitatis; stipulis viridibus oblique ovatis subfalcatis apice aristate attenuatis 3 mm. longis; floribus axillaribus pedunculis 15.-2 cm. longis; bracteis 2-3 proximis angustissime linearibus attenuatis 2 mm. longis; calycis tubo rotato-campanulato 1.5 cm. lato, lobis lineari-oblongis apice obtusis 1.5 cm. longis 6 mm. latis uninerviis, interiore glabris exteriore hispidis; petalis tenuibus oblongo-lanceolatis ca. 1 cm. longis 2.5 mm. latis; corona exteriori filamentosa, filamentibus 1.3 cm. longis ad basim liberis; corona interiori membranacea, apice fimbriata, duos annulos inferiores occultanti; gynandrophora 9 mm. longa glabra; fructibus globosis basi cuneatis. — OAXACA: Cuilopan Mountains, altitude 2135 m., 27 July, 1894, *Rev. Lucius C. Smith*, no. 44 (type, in hb. Gray); Sierra de San Felipe, altitude 2287 m., 31 May, 1894, *C. G. Pringle*, no. 5750. This species is probably nearest *P. Pringlei* Robinson & Greenman, differing most noticeably in the shape of the leaf, the position of the stipular glands, and the white instead of dark pubescence. The differences in the flowers seem to be rather of degree than of kind.

*Diospyros Palmeri*, n. sp., arborescens; ramulis divaricatis griseis glabris; foliis alternis obovatis 3-5 cm. longis 2 cm. latis, basi cuneatis breviter petiolatis, apice rotundatis vel truncatis, coriaceis superne nitida



subter reticulatis; calyce fructifero quinquepartito, segmentis inflexis obovatis vel oblongis parallele nerviis praeter basim fusco-puberulentem glabris; fructibus globosis depressis glabris nitidis 2.5 cm. diametro; pedunculis solitariis 5 mm. longis fusco-pubescentibus; seminibus oblongis 12 mm. longis 7 mm. latis, una facie convexa, altera plana. — SAN LUIS POTOSI: San Dieguito, 7-10 June, 1905, *Dr. Edward Palmer*, no. 631 (type, in hb. Gray). *Dr. Palmer* notes this as a large shrub or small tree 2-4 m. high with considerable top and a profusion of dark green leaves, the fruit thinly scattered, having the appearance of persimmons, light green but with a patch of red and brown at the exposed or lower end. Without the flowers its affinities are doubtful. Compared with the species listed by *Hemsley* (*Biol. Cent.-Am. Bot.* ii. 300) it differs as follows: from *D. ciliata* A. DC. in having obovate instead of ovate leaves; from *D. cuneifolia* Hiern, in being glabrous instead of hispid or pubescent, as well as in having leaves larger, and fruit three times the size; from *D. Ebenaster* Retz. it differs in the shape and size of leaves, much smaller fruit, and quite entire calyxlobes; from *D. velutina* Hiern, it differs in the shape of leaves and absence of fulvous velutinous pubescence, and from *D. texana* Scheele it also differs in leaves and pubescence.

*Forestiera puberula*, n. sp., divaricate ramosa; ramulis griseis et atro-puberulis, verrucosis cum squamulis marcescentibus alabastro-rum; foliis fasciculatis lineari-spatulatis apice obtusis basi breve petiolatis 5-10 mm. longis 1-nervatis, margine revolutis, superne puberulis, subter glabris porulosis; pedunculis cum foliis fasciculatis, 3-5 mm. longis; fructibus (immaturis) cylindraceis falcatis obtusis 8 mm. longis, 3 mm. diametro. — ZACATECAS: in arroyas, Cedros, June, 1908, *J. E. Kirkwood*, no. 12 (type, in hb. Gray).

Related to *F. angustifolia* Torr., differing chiefly in the puberulent stems and leaves, the latter smaller and strongly revolute. The cylindrical falcate fruit also distinguishes it. The flowers are unknown.

*Centaurium pusillum*, n. sp., nanum 4-8 cm. altum ramosissimum glabrum; ramis tenuissimis quadrangulatis; foliis imis rosulatis, primis spatulatis, ceteris oblanceolatis acutis 1 cm. longis 2 mm. latis, nerviis obscuris; foliis caulinis lanceolatis acuminatis vel apice acutis basi amplexicaulibus; floribus longe pedunculatis non-numquam sessilibus tetrameris 7 mm. longis; pedunculis inter angulos striatis; calycis laciniis fere liberis lanceolatis acutis carinatis, margine membranaceis 3-4 mm. longis, tubo brevi multo longioribus; corollae laciniis oblongis vel ellipticis obtusis 4 mm. longis 2 mm. latis contortis et supra capsulam marcescentibus, tubo calycem aequanti, faucibus constrictis; filamentis in faucibus insertis capillaribus 2 mm. longis; antheris ovato-cordatis

brevibus stigma superantibus; stylo brevi recto; stigmatibus bilamellato, partibus obovatis 1 mm. longis 0.5 mm. latis; capsulis calycem superantibus oblongo-ellipticis ad basim dehiscentibus cum duabus valvulis divergentibus; placentis paulo intrusis muricatis; seminibus numerosis brunneis suborbiculatis minute papillois vel irregulariter et interrupte corrugatis. — MICHOACAN: Morelia, on a bare damp mesa, 29 November, 1907, *C. G. Pringle*, no. 10,408 (type, in hb. Gray). This tiny plant seems nearest to *Centaurium tetramerum* (Siede), n. comb. (*Erythraea tetramera* Siede ex Schl. in Bot. Zeit. xiii 920), and resembles that species in its 4-merous flowers and dehiscent fruit. It differs, however, in the short corolla-tube not exceeding the calyx, the leaves with scarcely perceptible nerves, the fasciculate flowering stems, the persistent basal leaves, the striate peduncles, and the bilamellate stigma. The color of the flowers is not readily discernible in the dried specimens, but the lower part of the limb of the corolla appears to be yellow and the tips of the lobes tinged with pink.

*Spigelia quaternata*, n. sp., radicibus fasciculatis; caulibus multis ex caudice breve, 3 dm. altis purpureis minute scabridis, parte superiore angulatis; foliis saepissime quaternatis supremis oppositis ovato-oblongis apice acuminatis 4–8 cm. longis 1–3 cm. latis integris superne glabris vel scabridulis subter pallidioribus et glabris, nerviis primariis et secundariis hispidis-scabridis; stipulis brevibus triangularibus basi semi-amplexicaulibus folia conjungentibus; tot ramulis quot foliis ad nodos, terminantibus in spicis gracilibus; floribus flavis sessilibus secundis, in alabastro confertis, in fructu 3–6 mm. distantibus; sepalis lineari-lanceolatis acuminatis 4 mm. longis 1 mm. latis cum duabus glandibus interioribus; corollae tubo 8 mm. longo, laciniis oblongis acutis 3 mm. longis, superiore paulo longiore; capsulae basi persistente; seminibus globosis punctatis. — SAN LUIS POTOSI: Rascon, *Dr. Edward Palmer*, 19–22 June, 1905, no. 671 (type, in hb. Gray). This species is most closely related to *S. Humboldtiana* Cham. & Schlecht. and is easily distinguished by its much smaller flowers and its scabrid and more or less hispid pubescence.

*Bourreria obovata*, n. sp., ramulis senioribus minute albo-punctatis, junioribus canescentibus cum pilis brevibus adpressis; foliis obovatis superne scabridulis cum pilis brevibus adpressis basi minute pustulatis subter pallidioribus non scabridis, apice truncatis obtusis vel retusis, basi ad petiolum brevem attenuatis; pedunculis terminalibus cymosis cum pedicellis brevibus; bracteis foliaceis; calyce fere ad mediam partem 5-dentato, dentibus triangularibus acutis 4 mm. longis, utrinque adpresso-pilosellis; corolla rotata, tubo calycem aequanti, lobis 5–6 rotundatis, 5 mm. longis, basi auriculatis; staminibus 5–6,

insertis ad mediam tubi; antheris exsertis obscure mucronulatis; filamentis glandulosis et pubescentibus; stylo crasso, apice bifido, stigmatibus peltatis. — OAXACA: on hills, altitude 1300 m. at Jayacatlan, *Lucius C. Smith*, July 27, 1895, no. 549 (type, in hb. Gray), also Cuicatlan hills, June 17, 1895, no. 399.

*Seymeria deflexa*, n. sp., scabrida et glandulosa; foliis deflexis, majoribus oblongo-ovatis obtuse dentato-laciniatis, segmentis inferioribus crenatis apice obtusis, basi decurrentibus ad petiolum; minoribus oblongis integris basi cuneatis, superiore parte dentatis; petiolis brevibus; floribus divaricate-paniculatis, pedicellis capillaribus saepe decurvatis 5 mm. longis; calycis laciniis tubum campanulatum aequantibus, oblongo-ovatis obtusis recurvatis 2 mm. longis, in fructu patentibus; corolla campanulata 8 mm. longa, laciniis inaequalibus suborbiculatis ciliatis reflexis basi auriculatis; filamentis subulatis brevibus crassis pilosis; antheris exsertis flavis nervatis 3 mm. longis 1.3 mm. latis papillois, apice dehiscentibus; stylo antheras superante, in fructu declinato apice tenuiter clavato; ovario punctato-scabrido sub-cydoniformi. — NUEVO LEON: limestone ledges of the Sierra Madre above Monterey, 19 September, 1907, *C. G. Pringle*, no. 10,398 (type, in hb. Gray). This differs from other described species in having deflexed less dissected leaves, and pyramidal paniculate inflorescence. The color of the flowers is not known, but the exserted stamens, as well as the recurved divisions of the calyx and corolla, give the flowers a slight resemblance to some Californian species of *Dodecatheon* belonging to the *D. patula* group. The type specimen consists of the upper part of the stem, therefore the lowest leaves are unknown.

*Dioclyptera floribunda*, n. sp., perennis, erecte et diffuse ramosa, 12–15 dm. alta; ramis sexangulatis sparse pubescentibus, nodis remotis foliatis et floribundis supra axillas geniculatis; foliis integerrimis ovato-lanceolatis acuminatis 1 dm. longis, 5 cm. latis apice mucronatis, basi ad brevem petiolum decurrentibus, scabridule pubescentibus subter penninerviis et investis cum pilis brevibus furcatis; junioribus partibus albo-tomentosis; capitulis glomeratis, pedunculis brevibus vel abeuntibus; bracteis involucri 2, obovatis basi cuneatis chartaceis apice foliaceis saepe purpureo-tinctoreis scabridulis; umbellis inclusis 3-floris; bracteolis lineari-acuminatis calycem superantibus costatis et carinatis apice aristatis basi connatis; calycis segmentis trinerviis chartaceis attenuatis obscure glandulifero-pilosis 6 cm. longis; corolla verisimiliter flammea (coccinea fide Palmeri) leviter investa cum pilis furcatis 3 cm. longa, tubo gradatim ampliato, faucibus 5 mm. diametro, labiis paulo divergentibus, postice integris, antice 3-crenulatis; filamentis paulo pilosis; antheris exsertis, loculis discretis, superiore loculo

erecto, inferiore declinato; stylo glabro latitudine filamenta aequanti; stigmatibus obscure bidentato; ovario ovato-acuminato, inserto in receptaculo cupulato; capsula elliptica basi ad stipam latam contracta, apice minute glandulifera; seminibus suborbiculatis minutissime muriculatis et palmate nervatis. — DURANGO: San Ramon, April–May, 1906, *Dr. Edward Palmer*, no. 73 (type, in hb. Gray). *Dr. Palmer* notes that this is a loosely branching plant 12–15 dm. high, with many scarlet flowers, growing at the edge of shady woods. It belongs to Sect. *Sphenostegia* Nees in DC. Prodr. xi. 479, and is near *D. sexangularis* Juss. and *D. brachiata* Spreng. The corolla in this is larger, with the lips less spreading.

***Tetramerium flavum*, n.sp.**, caule erecto divaricate ramoso 6–12 dm. alto quadrangulato, inter angulos striato, scabridulo investo pilis tenuibus adpressis et pilis articulatis longioribus; ramis oppositis, junioribus glandulosis et dense albo-pubescentibus; foliis penninervatis ovato-acuminatis basi ad petiolum brevem inaequaliter attenuatis longissimis, in specimine viso 12 cm. longis, 5 cm. latis; petiolis 2 cm. longis; spicis axillaribus et terminalibus simplicibus vel compositis (ultima spica longissima); floribus imbricatis, bracteis distichis oblanceolatis aristatis trinerviis 5 mm. longis 1.5 mm. latis, apice recurvatis; involucri bracteolis connatis carinatis obovatis apice aristatis quinquenervatis 12 mm. longis, floram solitariam includentibus; calycis laciniis lineari-setaceis glandulifero-pilosis membranaceis 3 mm. longis; corollae flavae tubo anguste cylindrico 4 mm. longo, laciniis patenti-divaricatis 1 cm. longis, labio superiore erecto spatulato 1 cm. longo, inferiore ternato, segmentis patenti-divaricatis obovatis 1 cm. longis; filamentis faucibus insertis, glabris; antherarum loculis parallelis paulo inaequalibus muticis conjunctis; ovario crasso-stipitato apice hispido breve acuminato calycis lacinias superanti; receptaculo crasso clavato; stylo bifido antheras superanti. — DURANGO: San Ramon, April–May, 1906, *Dr. Edward Palmer*, no. 75 (type, in hb. Gray). This is most closely related to *T. aureum* Rose, which, however, has bracts and bracteoles obovate obtuse, leaves truncate or subcordate at base. From all other species it differs in having the cauline bracts narrower and much shorter than the involucre. It is a showy plant, rather woody, growing at base of mountains near the edge of woods. It is a free bloomer with "canary yellow flowers that close at night."

## V. NOTES ON MEXICAN AND CENTRAL AMERICAN ALDERS.

BY HARLEY HARRIS BARTLETT.

ALNUS ACUMINATA HBK. *A. acuminata a genuina* Regel, Monog. 89 (1861), *A. jorullensis* var. *acuminata* (HBK.) Ktze. Rev. Gen. ii. 638 (1891), not *A. acuminata* Mirb. Mém. Mus. Par. xiv. 464; t. 22 (1827), not *A. acuminata a genuina* Hemsl. Biol. Cent.-Am. Bot. iii. 165 (1883), not *A. acuminata* Sarg. Silva ix. 79, t. 457 (1896), not *A. jorullensis* var.  $\eta$  *acuminata* Winkl. Pflanzenreich, iv. 61, 127 (1904), not *A. acuminata* Fern. Proc. Am. Acad. xl. 25 (1904). Here are placed *Seemann*, no. 942, Loja, Ecuador, and, with considerable doubt, *Tonduz*, no. 11,680, "Bords des rivières au Copey," Costa Rica. The latter specimen is much more ferrugineous than the former and forms a transition to what has been called

ALNUS ACUMINATA var. FERRUGINEA (HBK.) Regel. ?? *Alnus ferruginea* HBK. *A. ferruginea* Fern. Proc. Am. Acad. xl. 27 (1904) *pro parte*. This name may be provisionally accepted for *Tuerckheim*, no. 351, Coban, Department of Alta Verapaz, Guatemala, which seems to be a very ferrugineous extreme of the plant here called *A. acuminata*. The pubescence is very dense, and is persistent on all but the oldest leaves.

ALNUS ARGUTA (Schlecht.) Spach. *Betula arguta* Schlecht. *Alnus arguta* Spach *a genuina* Regel, Monog. 93 (1861). In its typical form this species is accepted as interpreted by Professor Fernald. It presents, however, two variations which seem worthy of recognition. Neither of them appears to fall into any of Regel's four varieties. His var. *genuina* is here taken up as the type form of the species. Var. *Benthami* is so inadequately characterized as to be unrecognizable without access to the type. Moreover it came from Zacualtipan, to the north of the known range of either of the two varieties here proposed. Var. *ovata* was based upon material from three Mexican localities, and one Peruvian locality, but since Regel cited as a synonym *A. Mirbelii* var. *Grisb.* in Lechl. Pl. Peruv. the type is definitely fixed as the Peruvian element, which it is almost inconceivable should be the same as the Mexican. Var. *punctata* was purely South American.



*Alnus arguta* var. *cuprea*, n. var. Arbor aspectu inter formam speciei typicam *Alnumque glabratam* Fern. media. Ramuli glabri juventate rubescentes aetate griseo-brunnei. Folia magnitudine valde variabilia, usque ad 8.5 cm. lata 14 cm. (petiolo excluso) longa, basi rotundata vel leviter cordata, apice acuta vel acuminata, argute dupliciter vel irregulariter dentata, utrinque paene glabra, subtus vel nihil vel minus quam ea formae typicae glauca, colore saepe cuprea, supra atriora. Amenta ♀ pedunculata 9–11 mm. crassa ca. 2 cm. longa. — Oaxaca: wet cañon near base of the summit ridge of the Sierra de San Felipe above the City of Oaxaca, alt. 2135 m., *Pringle*, no. 10,251; west slope of Mt. Zempoaltepec, alt. 2350–2440 m., *Nelson*, no. 599; road from Juquila to Nopala, alt. 1220–2135 m., *Nelson*, no. 2415; vicinity of Cerro San Felipe, alt. 2900–3350 m., *Nelson*, no. 1154. Vera Cruz: Orizaba, *Bilimek*, no. 404; Mt. Orizaba, alt. 1830–2440 m., *Nelson*, no. 296; Orizaba, *Botteri*, no. 191.

*Alnus arguta* var. *subsericea*, n. var. *A. ferruginea* Fern. Proc. Am. Acad. xl. 27 (1904) *pro parte, non* HBK. ? *A. rufescens* Liebm. ex-Hemsl. Biol. Cent.-Am. Bot. iii. 165. Arbor ramulis griseo-brunneis, junioribus ferrugineo-puberulis. Folia laminis late ovatis maximis 14 cm. longis 9 cm. latis, basi leviter cordatis vel rotundatis, apice acutis vel breviter acuminatis, supra atroviridibus tenuiter sericeo-pilosis demum glabratis, pilis longis rectis valde appressis, subtus molliter glauco-pubescentibus, nervis rufescentibus in foliis maximis utrinque 16; petiolis subferrugineo-pubescentibus saepissime quam 2 cm. brevioribus. Gemmae parvae glutinosae puberulae pedicellis suis valde longiores nec raro sessiles. Amenta ♀ maturitate ca. 1 cm. crassa 3 cm. longa vel multo breviora. Nuculae alis percoriaceis angustissime cinctae. — Oaxaca: wet cañon near the base of the summit ridge of the Sierra de San Felipe, above the City of Oaxaca, *Pringle*, no. 10,252. This is also the locality cited by Hemsley for *A. rufescens* Liebm. From the name which Liebmann chose there can be little doubt that he had this plant before him, for the only other reddish-leaved *Alnus* from the same locality is so glabrous that Hemsley would certainly not have placed it with *A. acuminata* var. *ferruginea*. Since Liebmann's name is a *nomen nudum* it does not seem at all desirable to take it up in a changed category without having seen his type. To var. *subsericea* may be referred *Ghiesbreght*, no. 160, from Chiapas, the plant upon which Mr. Fernald's description of *A. ferruginea* is largely based.

*ALNUS CASTANAEFOLIA* Mirb. It is clear from the original plate and characterization that this species can have no close affinity to the Mexican plant cited by Hemsley under the name *A. jorullensis* HBK. *β castanaefolia*. The latter name should be placed, as to the Mexi-

can element, in the synonymy of *A. arguta* (Schlecht.) Spach var. *cuprea* Bartlett.

*Alnus glabrata* var. *durangensis*, n. var. Arbor trunco a cortice griseo sublevi tecto. Ramuli glabri ochracei modice graciles. Folia lanceolata 14 cm. longa infra mediam 6 cm. lata argute dentata, dentibus subremote serratis, supra glabra olivaceo-viridia, subtus glauca glabra vel secus nervos minute pubescentia, exigue resinoso-punctata, apice longe acuminata, basi acuta in petiolum 1.5 cm. longum decurrentia; nervis utrinque 9-10; petiolis anguste canaliculatis exigue albido-pubescentibus. Amenta ♀ ca. 4 maturitate cylindrica 2.5 cm. longa 8 mm. crassa, pedunculis saepe 6 mm. longis. Nuculae alis coriaceis anguste cinctae. — Collected in the vicinity of the City of Durango, State of Durango, April to November, 1896, *E. Palmer*, no. 965 (type, in hb. Gray). Readily distinguished from the typical form of the species by the glaucous lower leaf-surface.

*ALNUS JORULLENSIS* HBK. This species has been seen from the States of Jalisco, Michoacan, Mexico, Hidalgo, and Oaxaca, the var. *EXIGUA* Fern. from the States of Guanajuato and Oaxaca. The material from Oaxaca, both of the species (*Pringle*, no. 10,248) and of the variety (*Pringle*, no. 10,249), is in young foliage, and future collections may show that it belongs elsewhere.

*ALNUS JORULLENSIS* var. *E. W. Nelson*, no. 3661, collected near the Hacienda of Chaucol, Guatemala, has small sessile buds and cuneate leaves very much like those of *A. jorullensis*, but since the pistillate strobiles are unknown it seems better to leave the form undescribed rather than to risk adding another name to the involved synonymy of this species.

*A. MIRBELII* Spach. The only material in American herbaria which answers to the description and plate of this species is *Bang*, no. 1893, from Bolivia. Perhaps a sheet in the Gray Herbarium collected by *Seemann* and labelled by Dr. Gray "*And. Quitensis — Panama*" should be placed here also.

*Alnus ovalifolia*, n. sp., *A. acuminata* Fern. pro parte, non HBK. Arbor ramulis junioribus brunneis glabris subangulatis. Gemmae glutinosae brevipedicellatae sparsim pubescentes vel glabratae. Folia ovalia subregulariter denticulata, apice basique rotundata obtusa vel raro acutiuscula, supra solum in nervis perexiguae pilosa, subtus secus nervorum latera plus minusve pilosa, alias glabra, laminis 1.5-5.5 cm. latis 2.5-8.0 cm. longis; petiolis 2-10 mm. longis, supra canaliculatis pilosis, subtus glabris. Amenta ♂ 4-6 usque ad 13 cm. longa fere sessilia vel longipedunculata. Amenta ♀ in uno ramulo 3-4 ovoidea ca. 2.5 cm. longa 1.4 cm. crassa maturitate plerumque fecte sessilia

recte divergentia, duo summa propinqua. Nuculae 4 mm. longae 2.5-3 mm. latae basin versus angustatae, quam in speciebus affinis latius coriaceo-alatae, apice saepius auriculatae. — GUATEMALA: San Lucas, Department of Zacatepequez, alt. 1700 m., *J. Donnell Smith*, no. 2188 (type, in hb. Gray); Antigua, Department of Zacatepequez, *Kellerman*, no. 4966; San Miguel Uspantán, Department of Quiché, alt. 1800 m., *Heyde et Lux*, no. 2923. It was from the type of this species, in the main, that Professor Fernald drew up the description of *Alnus acuminata* in his Synopsis of the Mexican and Central American Species of *Alnus*. There the peculiar ashy-brown color of the bark and strobiles is mentioned, a character afterward emphasized as of diagnostic worth in his characterization of *Alnus Pringlei* Fern. The color is peculiar to the type specimen and seems to be due to a thin deposit of clay, perhaps wind-borne dust. Professor Thaxter has kindly examined the specimen for fungi, with negative results.

*ALNUS PRINGLEI* Fern. The range of this species probably extends northward to Durango. At least the following specimens in the National Herbarium are nearer to *A. Pringlei* than to any other species: Terreria, Jalisco, *M. E. Jones*, no. 439 a; San Ramon, Durango, 21 April-18 May, 1906, *Palmer*, no. 207.

*ALNUS RHOMBIFOLIA* Nutt. The accrediting of this species to Mexico in the Pflanzenreich is based upon an error in determination. The number cited as *A. rhombifolia* is *A. glabrata* Fern.

## VI. DIAGNOSES AND TRANSFERS OF TROPICAL AMERICAN PHANEROGAMS.

By B. L. ROBINSON

*Antigonon grandiflorum* (Bertol.), n. comb. *Polygonum grandiflorum* Bertol. Bologn. Nov. Comm. iv. 412 et *Florula Guatimalensis*, 12 (1840). *Antigonon guatimalense* Meisn. in DC. Prod. xiv. 184 (1856). *A. guatemalense* Hemsl. Biol. Cent.-Am. Bot. iii. 37 (1882).

*Tamonea euphrasiifolia*, n. sp., fruticosa ramosissima; ramis flexuosis a cortice flavido-griseo tectis; ramulis elongatis foliatis 4-gonis striatis griseo-puberulis; foliis subdeltoideo-ovatis flabelliformi-nervatis brevibus 4-6 mm. solum longis aequalis quam internodia plerumque brevioribus argute dentatis breviter petiolatis supra glabris rugosis viridibus subtus praecipue in nerviis puberulis; racemis spiciformibus pedunculatis 5-10 cm. longis; bracteis parvis subulatis ca. 2 mm. longis; pedicellis inferioribus ca. 4 mm. longis; calyce cylindrico demum turbinate maturitate 6 mm. longo 5-costato costis excurrentibus extus puberulo; corolla 1.7 cm. longa glabra; fructu obovoideo spinis solis e calyce exsertis. — Alta Mira, Tamaulipas, Mexico, 14-22 May, 1898, *E. W. Nelson*, no. 4415 (type, in hb. Gray and hb. U. S. Nat. Mus.).

*Russelia cuneata*, n. sp., modice robusta 1 m. alta verisimiliter frutescens; caulibus acute 4-gonis 4-costatis glabris laevisque prope nodos solum sparse pubescentibus, internodiis 5-10 cm. longis folia saepissime superantibus; foliis oppositis firmissculis 5-8 cm. vel ultra longis rhomboidei-oblongis supra mediam partem crenato-dentatis basi longe cuneatis integriusculis utrinque sparse puberulis vel subglabris; cymis multifloris ca. 3 cm. longis saepissime binis in axillis superioribus oppositis oriuntibus, pedunculis crassiusculis sordide pubescentibus ca. 6 mm. longis, pedicellis puberulis 4-6 mm. longis flexuosis ascendentibus; calycis lobis ovatis acuminatis brevissimis praecipue in costa media hispidulis margine subscariosis ca. 2 mm. longis; corolla tubulosa sanguinea in sicco nigrescenti 1 cm. longa glabra, lobis limbi brevissimis suberectis. — On granitic soil, El Ocote, Michoacan, Mexico, December, 1898, alt. 300 m., *E. Langlasse*, no. 723 (type, in hb. Gray). From its square stem and numerous flowered cymes near *R. floribunda* HBK. and *R. syringaeifolia* Schlecht. & Cham., but clearly distinct by its entirely different leaf-contour, smaller flowers, etc.

*Gratiola oresbia*, n. sp., perennis (Sect. GRATIOLARIA § SUBDIDYNAMAE PEDUNCULATAE) erecta 7-18 cm. alta; radicibus fibrosis numerosis; caulibus flexuosis viridibus mollibus foliosis fere a basi floriferis obscure praesertim apicem versus glanduloso-puberulis; foliis lanceolati-oblongis sessilibus auriculato-amplexicaulibus 1.5-2.4 cm. longis 4-6 mm. latis plerumque acutatis rarius obtusis 3 (vel obscure multi)-nerviis saepissime crenulatis vel rarius subintegris utrinque viridibus glabris; pedicellis axillaribus 1.5-2 cm. longis nutantibus glanduloso-puberulis; bracteolis sepaloideis lineari-oblongis obtusis 4-5 mm. longis; calycis segmentis anguste oblongis obtusis 3-nerviis ca. 5 mm. longis glanduloso-puberulis; corolla intense aurea 1.3 cm. longa extus glanduloso-puberula intus villosa, lobis latis brevibus retusis; staminibus fertilibus 2, connectivo membranaceo-expanso, loculis transversis; rudimentis 2 parvis filiformibus in tubo quam stamina fertilia altius affixis; capsula compressa ovata acuta maturitate segmenta calycis aequanti. — Sierra Madre Mountains, near Colonia Garcia, Chihuahua, Mexico, 25 August, 1899, *E. W. Nelson*, no. 6099 (type, in hb. Gray); also earlier at the same station, alt. 2285 m., *Townsend & Barber*, no. 31. This species appears to be most nearly related to *G. Drummondii* Benth., which, however, has narrower more attenuate leaves and a suborbicular obtuse capsule scarcely half the length of the lance-linear calyx-segments.

In a recent attempt to revise and label in accordance with the Vienna Rules of Nomenclature the material of the genus *Bacopa* in the Gray Herbarium the writer has found it necessary to employ several apparently new combinations, which it may be well to record here, as follows:

*Bacopa Beccabunga* (Griseb.), n. comb. *Herpestis Beccabunga* Griseb. Cat. Pl. Cub. 182 (1866). *Monniera Beccabunga* Ktze. Rev. Gen. ii. 463 (1891).

*Bacopa humifusa* (Griseb.), n. comb. *Herpestis humifusa* Griseb. Cat. Pl. Cub. 183 (1866). *Monniera humifusa* Ktze. Rev. Gen. ii. 463 (1891).

*Bacopa micromonnieria* (Griseb.), n. comb. *Herpestis micromonnieria* Griseb. Cat. Pl. Cub. 183 (1866). *Monniera micromonnieria* Ktze. Rev. Gen. ii. 463 (1891).

*Bacopa monnierioides* (Cham.), n. comb. *Ranaria monnierioides* Cham. Linnaea, viii. 31 (1833). *Herpestis Ranaria* Benth. in Hook. Comp. Bot. Mag. ii. 57 (1836). *Monniera monnierodes* Ktze. Rev. Gen. ii. 463 (1891). *Bacopa Ranaria* Chod. & Hassl. Bull. Herb. Boiss. ser. 2, iv. 288 (1904).

*Bacopa semiserrata* (Mart.), n. comb. *Bramia semiserrata* Mart.



Amoen. Monac. (Auswahl merkwürdiger Pflanzen — Choix des plantes remarquables) 11, t. 8 (1830). *Caconapea gratioides* Cham. & Schlecht. Linnaea, viii. 29 (1833). *Herpestis gratioides* Benth. in Hook. Comp. Bot. Mag. ii. 57 (1836). *Monniera semiserrata* Ktze. Rev. Gen. ii. 463 (1891). *Bacopa gratioides* Chod. & Hassl. Bull. Herb. Boiss. ser. 2, iv. 288 (1904).

*Bacopa stricta* (Schrad.), n. comb. *Herpestis stricta* Schrad. in Link, Enum. ii. 142 (1822). *H. domingensis* Spreng. Syst. ii. 801 (1825). *H. polyantha* Benth. in Hook. Comp. Bot. Mag. ii. 57 (1836). *Monniera stricta* Ktze. Rev. Gen. ii. 463 (1891).

*Heterotoma Pringlei*, n. sp., annua pusilla erecta 5–11 cm. alta glaberrima glaucescens; foliis radicalibus parvis ovato-rhomboides dentato-angulatis obtusis 3–5 mm. longis 1–4 mm. latis saepius purpurascens basi cuneatis, petiolo glaberrimo 3–7 mm. longo; foliis caulinis 1–2 minimis bracteiformibus linearibus vel anguste lanceolatis; racemo ca. 4 cm. longo 3–5-flora; bracteis linearibus 2–4 mm. longis; pedicellis gracilibus flexuosis patentibus 6–8 mm. longis 1-floris; calyce 3–4 mm. longo valde gibboso vel breviter calcarato, dentibus limbi subaequalibus brevibus lineari-oblongis; corolla azurea 7 mm. longa, dentibus superioribus 2 angustis erectis 1.5 mm. longis, labio inferiore 3-lobato, lobis obovatis rotundatis patentibus. — Chalky mountains, Nuevo Leon, Mexico, 7 November, 1904, C. G. Pringle, no. 13,274 (type, in hb. Gray).

*Vernonia Conzattii*, n. sp., herbacea, erecta; caulibus striato-angulatis sordide tomentosis foliosis apice corymboso-ramosis; foliis ovato-oblongis vel ovato-lanceolatis firmiusculis obscure serrulatis vel integriusculis acuminatis breviter petiolatis basi acutiusculis vel obtusis penninerviis supra rugosis scabris subtus paulo pallidioribus reticulato-venosis saltem juventate tomentosis; inflorescentia umbelliformi terminali valde convexa; pedicellis rectiusculis 1.2–3 cm. longis glanduloso-tomentellis cum bracteolis 1–2 parvis lanceolati-linearibus saepissime munitis; capitulis ca. 35-floris 1.2 cm. diametro; involucri campanulati squamis pluriseriatis valde inaequalibus purpurascens acutis mucronatisque ciliolatis, interioribus oblongis, exterioribus lanceolatis vel lanceolati-linearibus multo brevioribus; corollis purpureis glabris ca. 1 cm. longis, dentibus limbi 5 lineari-oblongis obtusis: achaeniis (immaturis) 1.8 mm. longis costatis subglabris plus minusve granuliferis; pappi setis numerosis albidis, interioribus 6–7 mm. longis, exterioribus paucis ca. 2 mm. longis. — Sta. Ines del Monte, Zimatlan, Oaxaca, Mexico, alt. 2700 m., 8–9 December, 1905, Prof. C. Conzatti, no. 1327 (type, in hb. Gray); also previously collected in somewhat less mature condition on the Cerro de San Felipe, Oaxaca,

alt. 1900 m., 14 November, 1897, *Conzatti & González*, no. 563 (hb. Gray). This species appears to be most nearly related to *V. Karvinskiana* DC. and *V. jaliscana* Gleason. It is distinguished from both by its somewhat larger and considerably more numerous flowered heads, as well as by the tomentose pubescence on the stem and lower surface of the leaves.

*Elephantopus micropappus* Klatt, *Jahrb. Hamburg. wissenschaft. Anstalt* ix. pt. 2, p. 124 (1892). Dr. Klatt's memorandum regarding this plant was grounded upon Ule's no. 1184, collected "in campo bei Laguna [Brazil] März 1889." The specimen examined and labelled by Dr. Klatt and now preserved in the Gray Herbarium has nothing whatever to do with *E. micropappus* Less. but is *GOMPHRENA PERENNIS* L.

*Phania Curtissii*, n. sp., suffruticosa oppositiramea tomentella; caulibus teretibus obscure striatulis; foliis oppositis graciliter petiolatis late ovatis supra puberulis subtus paulo pallidioribus tomentellis punctulatis, caulinis late cordatis 1.5-2.2 cm. longis et latis grosse crenato-lobatis vel subtripartitis, petiolo ca. 1 cm. longo, foliis ramealibus multo minoribus basi obtusis vel raro acutiusculis nec cordatis 7-15 mm. longis 5-12 mm. latis, petiolo 3-4 mm. longo; capitulis parvis graciliter pedicellatis numerosis cymosis ca. 25-floris; involucri squamis oblanceolati-linearibus acutis viridibus ca. 3 mm. longis subaequalibus; corollis albis; achaeniis nigris glabris deorsum decrescentibus 5-angulatis lucidis; pappi squamellis 5 saepissime 3-5-fidis ciliolatis dorso granuliferis. — Near Nueva Gerona, Isle of Pines, West Indies, 17 December, 1903, *A. H. Curtiss*, no. 239 (type, in hb. Gray). This species most nearly approaches *P. matricarioides* (Spreng.) Griseb., but may be readily distinguished by the very different form of its leaves, which in most cases are fully as wide as long and on the main stems are cordate.

*STEVIA BERLANDIERI* Gray. In this species, now known from several states of northern Mexico, it is easy to remark certain rather striking differences of pubescence and glandularity, though these do not seem to be correlated with other distinctions of importance. In the typical form, occurring in Tamaulipas and Nuevo Leon, the branchlets, leaves, and petioles are minutely and often sparingly glandular-pulverulent rather than pubescent, and the involucre scales are rather conspicuously covered with sessile globular aureous atoms. From this very constant typical form the following varieties are easily distinguished.

*Var. podadenia*, n. var., ramulis et foliis et petiolis laxe crispeque griseo-pubescentibus; involucri squamis cum glandulis stipitatis hispidulis. — *S. Berlandieri* Hemsl. *Biol. Cent.-Am. Bot.* ii. 84 (1881), in

part, not Gray. — San Luis Potosi, Mexico, 22° N. Lat., alt. 1830–2400 m., *Parry & Palmer*, no. 322 (type, in hb. Gray); in mountains, San Miguelito, San Luis Potosi, August, 1876, *Schaffner*, no. 247.

Var. *anadenotricha*, n. var., dense crispeque puberula; foliis quam ea formae typicae paulo majoribus 4–5 cm. longis 3.5–4 cm. latis; involucri squamis brevioribus 3–4 mm. longis crispe puberulis, pilis omnino eglandulosis. — Southwestern Chihuahua, August to November, 1885, *Dr. Edward Palmer*, no. 257 (type, in hb. Gray).

*Stevia dictyophylla*, n. sp., fruticosa ramosa; caulibus teretibus foliosis brunneis crispe tomentellis; foliis oppositis ovatis vel ovati-ellipticis acutiusculis integerrimis vel obsolete crenato-dentatis 3.5–6 cm. longis 12–25 mm. latis basi cuneatis punctatis supra scabriusculis subtus paulo pallidioribus crispe puberulis prominenter reticulato-venosis supra basin subtrinerviis deinde pinnatim venosis, petiolo 3–7 mm. longo cuneato-alato; corymbis densis multicapitulatis valde convexis 12–14 cm. diametro; bracteis ovatis vel ellipticis foliaceis; capitulis subsessilibus 5-floris; involucri squamis lineari-oblongis acutiusculis dorso rotundatis vel plus minusve carinatis griseo-tomentellis 4 mm. longis; corollis 3.8 mm. longis albidis valde exsertis, tubo proprio 1.3 mm. longo extus granuloso, dentibus limbi ovatis patentibus minute hispidulis; achaeniis gracillimis nigrescentibus acute 5-gonis glabriusculis basi callosis apice cupulo brevissimo coronatis. — *S. subpubescens* Benth. Pl. Hartw. 19 (1839); Hemsl. Biol. Cent.-Am. Bot. ii. 90 (1881), in part; not Lag. — Guanajuato, Mexico, *Hartweg*, no. 37, (type, in hb. Gray); hills near Guadalajara, Jalisco, Mexico, 11 December, 1889, *C. G. Pringle*, no. 2832 (hb. Gray). *S. subpubescens* Lag., as ordinarily and with probable correctness interpreted, differs in its more oblong leaves, which are decidedly more pubescent and much less venose-reticulate, also in its smoother involucre, etc.

*Stevia revoluta*, n. sp., fruticosa dichotomo-ramosa griseo-puberula; ramis teretibus nodosis a cortice griseo tectis; ramulis teretibus rectiusculis foliosis griseo-puberulis; foliis oppositis lanceolato-linearibus integerrimis 5–7 cm. longis 4–6 mm. latis 1-nerviis pinnatim obscure venosis supra viridibus puberulis subtus canescenti-tomentosis margine valde revolutis; corymbis multicapitulatis densiusculis griseo-puberulis leviter convexis terminalibus; bracteis linearibus ramos ramulosque inflorescentiae subaequantibus; involucri squamis 5 oblongis acutis purpurascensibus, exterioribus dorso rotundatis nec carinatis crispe puberulis, interioribus plus minusve carinatis; flosculis 5; corollis 5 mm. longis, tubo externe sparse granulifero saepius purpureo, dentibus limbi 5 albis ovatis dorso hispidulis; achaeniis nigrescentibus gracilibus subglabris lucidulis acute 5-gonis 4.3 mm. longis apice cupula brevi

scariosa coronatis, aristis nullis. — Rocky slopes, Cerro de Gentile, Puebla, Mexico, August, 1907, *C. A. Purpus*, no. 2539 (type, in hb. Gray). This species most nearly approaches *S. arachnoidea* Robinson, but differs in its much narrower, entire, and revolute-margined leaves, grayish-puberulent involucre, etc.

*Eupatorium malacolepis*, n. sp., perenne 3–12 dm. altum herbaceum vel basi lignescens fere a basi oppositirameum; ramis teretibus brunnescentibus pubescentibus vel puberulis; foliis oppositis petiolatis ovatis vel rhomboideis tenuibus crenato-dentatis 4–6 cm. longis 2.4–5 cm. latis a basi cuneato 3-nervatis ad apicem obtusiusculum angustatis; inflorescentia trichotomo-corymbosa; capitulis parvis numerosissimis ca. 5 mm. diametro 40-floris; involucri campanulati squamis subaequalibus oblanceolati-oblongis 2.5 mm. longis pallide viridibus tenuibus 2–3-nerviis dorso tomentellis margine tenuissimis saepissime ciliolatis; corollis albis 2.4 mm. longis, tubo proprio gracili faucibus distincte ampliatis campanulatis paulo longiore; achaeniis nigris lucidis glaberrimis 5-angulatis 1 mm. longis; pappi setis paucis corollam subaequantibus laete albis tenuissimis barbulatis. — In dense woods along water courses, San Ramon, Durango, Mexico, 21 April–18 May, 1906, *Dr. Edward Palmer*, no. 90 (type, in hb. Gray); oak woods on hills near Huachinango, alt. 1375–1675 m., 4 March, 1897, *E. W. Nelson*, no. 4011 (hb. Gray, distributed as *E. pazcuarensis* HBK.). *E. malacolepis* differs from *E. pazcuarensis* HBK. and *E. isolepis* Robinson, to which it bears a considerable resemblance, in having much smaller flowers and shorter glabrous achenes.

*Eupatorium oresbioides*, n. sp., perenne lignescens; ramis teretibus plus minusve flexuosis foliatis fulvo-tomentellis; ramulis et pedunculis et petiolis purpureo-lanatis, pilis creberrimis tenuissimis moniliformibus; foliis oppositis graciliter petiolatis late ovatis hastatis 8–11 cm. longis 6–10 cm. latis tenuibus duplici mucronato-serratis caudato-acuminatis basi rotundatis vel subtruncatis cum angulis vel lobis lateralibus 1(–3) acuminatis divaricatis utroque munitis supra viridibus glabriusculis subtus praecipue in nerviis venisque tomentellis, nerviis ca. 7 paulo supra basin pinnatim orientibus, petiolis 1.5–5 cm. longis; panicula corymbiformi subglobosa multicapitulata 8–10 cm. diametro; bracteis petiolatis inferioribus foliaceis superioribus minimis; bracteolis filiformibus 2 mm. longis; pedicellis gracillimis patentibus 1–3 mm. longis; capitulis ca. 17-floris 8 mm. altis; receptaculo parvo convexo brevissime setulifero; involucri anguste campanulati squamis valde inaequalibus 3–4-seriatim imbricatis, extimis minimis linearibus, intermediis lanceolatis nunc appressis nunc laxe patentibus vel reflexis, interioribus oblongis obtusis erosio puberulis violaceo-tinctis; corollis

graciliter tubulosis supra mediam partem paulo in fauces ampliatis granulosis 4 mm. longis limbum versus purpureo-violaceis, dentibus limbi brevissimis obtusis; pappi setis albis corolla distincte brevioribus; achaeniis 5-gonis glabris 1.1 mm. longis basim versus paulo decrescentibus. — Alturas de Oaxaca, Mexico, 1800 m. alt., 20 February, 1907, Prof. C. Conzatti, no. 1738 (type, in hb. U. S. Nat. Mus., fragments in hb. Gray). A species somewhat approaching *E. oresbium* Robinson in many of its more technical characters, but readily distinguished by its hastate-angled leaves, more globular inflorescence, purple pubescence, etc.

*Eupatorium ramonense*, n. sp., herbaceum vel basi paulo lignescens a basi valde decumbens multirameum, ramis oppositis teretibus flexuosis foliosis viridibus pubescentibus ascendentibus 1.5–2 dm. vel ultra altis; foliis oppositis petiolatis ovato-lanceolatis argute serratis vel biserratis acuminatis basi obtusis vel saepe plus minusve cuneatis trinerviis 3–4.5 cm. longis 1.6–1.8 cm. latis supra atroviridibus minute pubescentibus subtus laete viridibus in nerviis breviter sparseque pilosis, petiolis 0.8–3 cm. longis hispidulis; capitulis 75-floris longipedicellatis 1 cm. diametro in cymis multicapitulatis quasi fastigiatis; pedicellis filiformibus 2–3.5 cm. longis erectis breviter pubescentibus; bracteis lineari-lanceolatis acutis 3–5 mm. longis; involucri campanulati squamis subaequalibus (exterioribus 2–3 brevioribus) lanceolati-linearibus attenuatis viridibus 2–3-nerviis breviter hispidulis 4–5 mm. longis; corollis laete albis 3.8 mm. longis glabris vel sparse pilosis, tubo proprio gracili 1.7 mm. longo, faucibus subcylindrici-campanulatis distincte ampliatis, dentibus limbi deltoideis brevissimis; achaeniis nigris 2 mm. longis 5-angulatis in costis sursum hispidulis apicem basimque versus paulo decrescentibus. — In shady moist places, forming compact masses, San Ramon, Durango, Mexico, 21 April–18 May, 1906, Dr. Edward Palmer, no. 74 (type, in hb. Gray). This species is nearly related to *E. petiolare* Moc., but is readily distinguished by its smaller ovate-lanceolate (never cordate) and much smoother leaves, as well as by the somewhat harsher non-glandular pubescence of the pedicels and involucreal scales.

*Melampodium dicelocarpum*, n. sp., gracile 4 dm. altum; caule dichotomo flexuoso striato-costato viridi sparse pubescenti vel puberulo nodos versus atropurpureo, internodiis ca. 1 dm. longis; foliis oppositis graciliter petiolatis ovato-rhomboides tenuibus acuminatis paucidentatis basi abrupte acutatis vel etiam acuminatis 3-nervatis supra laete viridibus sparse pilosis subtus paulo pallidioribus subglabris 3.5–6 cm. longis 1.2–3.3 cm. latis; petiolo 5–10 mm. longo; pedunculis filiformibus 3–5 cm. longis in dichotomis caulibus solitariis nutantibus vel etiam



deflexis puberulis; capitulis minimis primo erectis 3-3.5 mm. diametro, involucri squamis exterioribus 3-4 ovatis herbaceis acuminatis maturitate late patentibus 2.5 mm. longis; disco valde convexo, receptaculo columnari; flosculis ♀ 3-5, ligulis minimis flavis ca. 1 mm. longis; fructu (achaeenio in squama involucri interioris involuto) obovato compresso apice dentibus 2 parvis rectis conicis instructo quorum uno antico altero postico, faciebus lateralibus fructus utrinque cum cavulis 2 parvis profundis insignibus, facie postica rotundata vix carinata inconspicue tuberculato-scabrido. — Clayey soil, on prairies, El Calabazal, Michoacan or Guerrero, Mexico, alt. 300 m., 20 October, 1898, *E. Langlasse*, no. 482 (type, in hb. Gray). A species related perhaps most nearly to *M. microcephalum* Less., which, however, is described as having leaves sessile by a much narrowed base. There is nothing furthermore in Lessing's description of the achene to suggest that he had before him the peculiar fruit of the present species.

*Melampodium tepicense*, n. sp., gracile parvum annuum basi decumbens plus minusve repens deinde erectum 5-9 cm. altum dichotomo-ramosum; caule tenui bifariam puberulo folioso; foliis ovatis vel rhomboideis obtusis vel obtusiusculis paucidentatis basi cuneatis 3-nerviis supra viridibus sparse pilosis subtus paulo pallidioribus praecipue marginem versus hirsutulis 10-14 mm. longis 4-7 mm. latis, petiolo 3 mm. longo gracili angustissime alato; capitulis parvis 3 mm. diametro inconspicuis in dichotomis breviter pedicellatis, pedicellis ca. 1 mm. longis 1-capituliferis; involucri exteriori 5-partito, lobis obovatis obtusis 2.5-3 mm. longis 3-5-nerviis ciliatis viridibus; receptaculo parvo conico; flosculis liguliferis 5, ligulis ovato-oblongis cucullatis viridescensculis 3-nerviis 1.8 mm. longis apice 2-dentatis, fructu (i. e. achaeenio in bractea involuto) compresso semiobovato dorso tuberculato apice ecupulato exappendiculato; flosculis disci ca. 5. — Tepic, Mexico, 5 January to 6 February, 1892, *Dr. Edward Palmer*, no. 1814 (type, in hb. Gray). This species should stand nearest to *M. arvense* Robinson, but it is readily distinguished from that species by its leaf-form, the shape of the rhombic-ovate bracts, the more numerous ray-flowers, etc.

*Jaegeria glabra* (Wats.), n. comb. *Sabazia glabra* Wats. Proc. Am. Acad. xxiii. 277 (1888). *Jaegeria petiolaris* Robinson, Proc. Am. Acad. xxxv. 316 (1900). When this species was transferred some years ago to *Jaegeria* its specific name was changed owing to the existence of *J. hirta*, var. *glabra* Bak. in Mart. Fl. Bras. vi. pt. 3, 167 (1884). According to the Vienna rules, however, the existence of a varietal name in a genus is no obstacle to the use of the same name in the specific category and, therefore, the combination *J. glabra* is required by priority.

*Gymnolomia scaberrima* (Benth.), n. comb. *Tithonia scaberrima* Benth. in Oerst. Vidensk. Meddel. 1852, p. 91. *Tithonia platylepis* Sch. Bip. ex Benth. & Hook. f. Gen. ii. 368 (1873). *Mirasolia scaberrima* Benth. & Hook. f. ex Hemsl. Biol. Cent.-Am. Bot. ii. 168 (1881). *Gymnolomia platylepis* Gray, Proc. Am. Acad. xix. 5 (1883); Robinson & Greenman, Proc. Bost. Soc. Nat. Hist. xxix. 102 (1899). *G. decurrens* Klatt, Leopoldina, xxiii. 90 (1887). *Perimeniopsis perfoliata* Sch. Bip. ex Klatt, Leopoldina, xxiii. 90 (1887).

*Verbesina* (§ *Saubenetia*) *Langlassei*, n. sp., fruticosa 2 m. alta; ramis 4-angulatis angustissime 4-alatis striatis scabro-tomentellis; foliis lanceolatis oppositis sessilibus utroque acuminatis serratis vel serratulis utrinque viridibus 10-12 cm. longis 2-3 cm. latis supra scaberrimis subtus vix pallidioribus flavescenti-viridibus tomentellis; capitulis radiatis 9 mm. altis ca. 20-floris in corymbo plano densiusculo ca. 6 cm. diametro basi foliaceo-bracteato dispositis; pedicellis tomentosis 4-9 mm. longis; involucri ovoideo-subcylindrici squamis subtriseriatim imbricatis extimis brevissimis suborbicularibus glabrisculis vix herbaceis, intermediis late ovati-oblongis stramineis intimis paulo longioribus angustioribusque laete flavis; flosculis ♀ 4-5 fertilibus liguliferis, ligulis flavis ellipticis 5-7 mm. longis, tubo gracillimo glabro; flosculis ♂ ca. 15, corollis flavis, tubo proprio brevi, faucibus multo longioribus, dentibus limbi deltoideis brevibus erectis; achaeniis nigris saepe sursum albido-tuberculosis 3 mm. longis bialatis biaristatis. — Granitic soil, Sierra Madre Mountains, Michoacan or Guerrero, Mexico, 1300 m. alt., 7 November, 1898, *E. Langlasse*, no. 595 (type, in hb. Gray). This species appears to belong near *V. acapulcensis* Robinson & Greenman, but is readily distinguished by its considerably smaller leaves, smaller fewer-flowered heads, and non-herbaceous involucre.

*Otopappus brevipes*, n. sp., fruticosus; caulibus teretibus griseis striatulis vix puberulis, internodiis 4-5 cm. longis; foliis ovati-lanceolatis acuminatis ca. 1 dm. longis 3-4 cm. latis basi attenuatis margine mucronulato-denticulatis supra scabris rugulosis subtus griseo-tomentosis reticulato-venosis; panicula 1.5-1.8 dm. longa 1-1.2 dm. diametro folioso-bracteata puberula, ramis capituliferis late patentibus racemiformibus vel spiciformibus; capitulis discoideis brevissime pedicellatis ca. 1 cm. diametro; flosculis numerosis; corollis albidis, tubo proprio gracili valde curvato sursum in fauces campanulatos abrupte dilatatis, dentibus limbi deltoideis subrectis; achaeiis 2-aristatis in latere interiore a media parte ad apicem aristae interioris late alatis. — Temperate region, Chiapas, Mexico, 1864-1870 (flowering in November and December), *Dr. Ghiesbreght*, no. 541 (type, in hb. Gray). In

its discoid heads and in the character of its corolla and achene, this species resembles *O. curviflorus* (R. Br.) Hemsl., but it is readily distinguished by its different inflorescence, the heads being very short-pedicelled; the leaves are longer and relatively narrower, and carefully examined the throat of the corolla is found to be campanulate and the deltoid segments of the limb straightish, while in *O. curviflorus* the throat is very short and funnel-formed, the limb being of lanceolate spreading-recurved segments.

Var. *glabratus* (Coulter), n. comb. *O. curviflorus*, var. *glabratus* Coulter, Bot. Gaz. xx. 50 (1895). — Folii tenuioribus utrinque viridibus supra scabridis subtus solum in nerviis venisque obscure puberulis; inflorescentia floribusque ut formae typicae. — Volcano of Jumaytepeque, Department Santa Rosa, Guatemala, alt. 1850 m., November, 1892, *Heyde & Lux*, no. 4235 (of Mr. J. Donnell Smith's distribution).

*Otopappus tequilanus* (Gray), n. comb. *Zexmenia tequilana* Gray, Proc. Am. Acad. xxii. 425 (1887), pro parte, i. e. quoad pl. Palmeri no. 359. — Folii tenuioribus levioribus vix rugosis vix reticulatis.

Var. *acuminatus* (Wats.), n. comb. *Zexmenia tequilana* Gray, Proc. Am. Acad. xxii. 425 (1887), pro parte, i. e. quoad pl. Palmeri no. 394. *O. acuminatus* Wats. Proc. Am. Acad. xxvi. 140 (1891). — Folii quam ea formae typicae multo rugosioribus subtus tomentosis reticulato-venosis.

*Cosmos Nelsonii* Robinson & Fernald, n. sp., herbaceus perennis 6–8 dm. altus; caule tereti erecto subsimplici glabro; foliis oppositis petiolatis bipinnatifidis 5–8 cm. longis, 4–9 cm. latis, segmentis lanceolatis acutis plerisque 1–2 cm. longis, 4–6 mm. latis integris vel 2–3-lobatis supra puberulis subtus paulo pallidioribus margine scabriusculociliolatis basi cuneato-decurrentibus, rhachi glabro gracili vix alato; capitibus saepe 3 nutantibus 4–4.5 cm. (radiis inclusis) diametro; pedunculis 9–12 cm. longis; involucri campanulati squamis exterioribus ca. 8 lineari-oblongis acutatis ca. 1 cm. longis 1.7 mm. latis saepe 5-nerviis, squamis interioribus ovato-oblongis quam exteriores haud longioribus crebre striatis margine tenuibus pallidisque; flosculis disci flavis; antheris linearibus brunneo-violaceis; achaeniis graciliter fusiformibus glabris; aristis pappi saepissime 4 retrorsum barbatis quarum duae longae, aliae multo breviores; ligulis 8–10 ellipticis vel oblongis pallide purpureis ca. 2 cm. longis 1 cm. latis. — Vicinity of Cerro San Felipe, Oaxaca, Mexico, alt. 2900–3300 m., 1 September, 1894, *Nelson*, no. 1176, in part (type, in hb. Gray). — Unfortunately specimens of *Bidens pilosa* L. were by some oversight or transposition of labels distributed under the same number. — Further material of *C. Nelsonii*

was secured southwest of the City of Oaxaca, alt. 2300–2900 m., 10–20 September, 1894, *Nelson*, no. 1363 (hb. U. S. Nat. Mus.); and in the Valley of Oaxaca, alt. 1700–2300 m., 20 September, 1894, *Nelson*, no. 1449 (hb. U. S. Nat. Mus.). This species is nearly related to *C. scabiosoides* HBK., *C. Uhdeanus* Kunth, and *C. caudatus* HBK. From *C. scabiosoides* it differs in its pale rays, yellow disk-flowers, and bipinnatifid leaves; from *C. Uhdeanus* (which seems to be represented by Pringle's no. 8238) it differs in having larger heads, lighter rays, and yellow disk-flowers; and from *C. caudatus* it is distinguished by having the involucre scales of subequal length and achenes usually 4-aristate and much less caudate-attenuate.

**Cosmos Palmeri**, n. sp., herbacea 3–5 dm. alta; radice e fibris 2–5 tuberiformibus graciliter fusiformibus elongatis 5–8 mm. crassis; caule tereti folioso puberulo; foliis oppositis vel alternis bipinnatifidis 3–5 cm. longis, lobis linearibus 1-nerviis acutiusculis in margine et in nervo breviter hispidulis, 4–17 mm. longis 1–2 mm. latis; pedunculis ca. 2 dm. longis nudis 1-capitatis; capitibus (ligulis inclusis) 6–8 cm. diametro; involucri squamis exterioribus ca. 8 lanceolati-oblongis ascendentibus vel saepe reflexis 8 mm. longis 2 mm. latis viridibus striatis gradatim ad apicem obtusiusculum angustatis apice paulo incrassatis interioribus ovati-oblongis acutiusculis viridi-stramineis glabris striatis margine tenuibus ca. 1.5 cm. longis ca. 5 mm. latis apice ciliolatis; ligulis ca. 8 lilacinis ellipticis 2.5–3.5 cm. longis 1.2 cm. latis; corollis disci flavis; achaeniis (valde immaturis) fusiformibus in costis hispidulis apice aristas 2 rigidiusculas erectas gerentibus; aristis levissimis apice solum aculeolis binis patenti-deflexis munitis. — Moist spots on hills and plains at Otinapa, Durango, Mexico, 25 July–5 August, 1906, *Dr. Edward Palmer*, no. 388 (type, in hb. Gray).

**Cosmos Pringlei** Robinson & Fernald, n. sp., e radicibus 1–2 tuberiformibus crassiusculis 5–7 cm. longis erectus 6–9 dm. altus; caule tereti flexuoso griseo-puberulo vel -polverulo praecipue in media parte folioso; foliis petiolatis firmiusculis ab ovato-oblongis indivisis apice dentatis ad formas profunde partitas vel pinnatifides cum segmentis linearibus integris obtusis variantibus; capitibus magnis (ligulis inclusis) 6 cm. diametro, pedunculis 1–3 saepe 3 dm. longis; involucri campanulati squamis ovato-oblongis exterioribus 8–11 mm. longis interioribus ca. 13 mm. longis; flosculis disci flavi; achaeniis graciliter rostratis 16 mm. longis sursum sparse hispidulis apice aristas binas arcuato-ascendentes retrorsum barbatas gerentibus; ligulis late ellipticis laete purpureis nec atro-violaceis. — Chihuahua, Mexico: pine plains at the base of the Sierra Madre, 20 September, 1887, *Pringle*, no. 1299 (type, in hb. Gray); at base of Mt. Mohinora, 12 km. from

Guadalupe y Calvo, alt. 2150 to 2300 m., *Nelson*, no. 4853; near Colonia Garcia, 25 August, 1899, *Nelson*, no. 6097; near Casas Grandes, 15 August, 1899, *Townsend & Barber*, no. 438. This species has been variously referred to *C. scabiosoides* HBK. and *C. diversifolius* Otto. From the former it is readily distinguished by its larger and much paler rays, yellow disk-flowers, and puberulent stem; from the latter in having the stem puberulent instead of sparingly to copiously beset with longer hairs, also in having a firmer leaf-texture, a more leafy stem, etc.

*COSMOS SCABIOSOIDES* HBK. Nov. Gen. et Spec. iv. 242 (1820). This species presents leaf-forms so diverse that without the numerous transitions now known it would be difficult to believe them conspecific. The extremes are certainly so marked as to merit at least formal recognition. The typical form, described as having "folia pinnatipartita, foliolis aut laciniis quinque, sessilibus, lanceolato-oblongis, acutis, basi cuneatis, apicem versus subserratis," was collected near Patzcuaro in Michoacan, and appears to be exactly represented by Pringle's no. 4263 from that locality. Differing markedly from this typical form are the following:

*Forma indivisus*, n. f., foliis indivisis integriusculis vel irregulariter serratis lanceolatis vel lanceolato-ovatis. — Hills of Patzcuaro, Michoacan, 11 October, *Pringle*, nos. 4263 in part, and 3589 in part; in shady places near San Miguelito, San Luis Potosi, *Schaffner*, no. 200; on the Sierra Madre, Zacatecas, 18 August, 1897, *Rose*; near Santa Teresa, Tepic, *Rose*, no. 3433; in the Sierra Madre, west of Balaños, Jalisco, *Rose*, no. 2957. Transitions to the typical form are frequent and are well illustrated by Purpus's no. 1551 (Salto de Agua, Mexico) in which the lower leaves are undivided and the upper pinnatifid with lanceolate segments.

*Calea Peckii*, n. sp., fruticosa scandens; caule volubile tereti lignoso lenticellis minutis prominulis scabro atrobrunneo oppositirameo; foliis oppositis ovatis subintegris breviter petiolatis acutis 2-4 cm. longis 1-2.2 cm. latis basi subrotundatis 3-nerviis utrinque scabriusculis quamquam aspectu glabris subtus paulo pallidioribus aureo-atomiferis, petiolo gracili puberulo ca. 3 mm. longo; pedicellis in axillis superioribus binis vel trinis; inflorescentia fasciculiformi vel corymbiformi rotundata multicapitulata; capitulis ca. 8 mm. diametro homogamis; involucri subcylindrici squamis valde inaequalibus exterioribus brevibus late ovatis puberulis ciliolatisque subherbaceis plus minusve squarrosis, intermediis longioribus ovato-oblongis flavescentibus rubro-striatis, intimis anguste-lanceolatis laete flavis rubro-striatis acutis; corollis flavis aureisve involucrium modice superantibus;



achaeeniis graciliter obconicis tomentellis 2 mm. longis; pappi squamulis ca. 23 anguste linearibus attenuatis ca. 5 mm. longis scariosis maturitate patentibus. — In thickets, British Honduras, *Prof. Morton E. Peck*, no. 64 (type, in hb. Gray). A species somewhat resembling *C. prunifolia* HBK., but differing in having smaller leaves, sessile fascicles from the axils of leaf-like bracts, etc.

*Calea scabra* (Lag.), n. comb. *Calydermos scaber* Lag. Gen. et Spec. Nov. 25 (1816); DC. Prod. v. 669 (1836). *Calea peduncularis*, var. *epapposa* "HBK. Nov. Gen. et Spec. iv. 296, t. 408, f. 5" ex DC. Prod. v. 669 (1836); Robinson & Greenman, Proc. Am. Acad. xxxii. 23 (1896). — Foliis ovatis vel ovato-lanceolatis; achaeeniis calvis.

Var. *longifolia* (Lag.), n. comb. *Calydermos longifolius* Lag. Gen. et Spec. Nov. 25 (1816); DC. Prod. v. 669 (1836). *Calea peduncularis*, var. *longifolia* Gray, Proc. Am. Acad. xxii. 430 (1887), as to synon.; Robinson & Greenman, Proc. Am. Acad. xxxii. 23 (1896). — Foliis anguste lanceolati-oblongis elongatis; achaeeniis calvis.

Var. *peduncularis* (HBK.), n. comb. *Calea peduncularis* HBK. Nov. Gen. et Spec. iv. 295, t. 408, f. 1-4 (1820). *Calebrachys peduncularis* Cass. Dict. lv. 277 (1828), acc. to Hook. f. & Jack. Ind. Kew. i. 383 (1895), but the combination merely implied not actually made by Cassini. — Foliis ovatis vel ovati-lanceolatis; involucri squamis luteis; achaeeniis papposis.

Var. *livida* (Robinson & Greenman), n. comb. *Calea peduncularis*, var. *livida* Robinson & Greenman, Proc. Am. Acad. xxxii. 24 (1896). — Foliis lanceolatis vel lanceolati-oblongis; involucri squamis atropurpureis; achaeeniis papposis.

*Perezia hebeculada* (DC.) Gray, var. *urolepis*, n. var., capitibus quam ea formae typicae majoribus 2.5 cm. longis; involucri squamis exterioribus longis conspicue caudato-attenuatis interiores longitudine subaequantibus; ceteris formae typicae simillima. — Sierra de Pachuca, Hidalgo, Mexico, alt. 2900 m., 10 December, 1907, *Pringle*, no. 13,975 (type, in hb. Gray).

*Perezia nudiuscula*, n. sp., gracilis erecta verisimiliter perennis; caule gracili tereti purpurascenti glabro sparse foliato; foliis linearibus vel lineari-oblancoelatis erectis firmiusculis acutis 2-4 cm. longis 2-5 mm. latis glabris patente denticulatis sessilibus basi subamplexicaulibus; capitibus ca. 12-floris laxo corymboso-paniculatis 1.5-2.2 cm. diametro graciliter pedicellatis; pedicellis ascendentibus 1-3.5 cm. longis saepe bracteolas 1-2 subulatas gerentibus; involucri squamis valde inaequalibus apice acuminatis et purpurascensibus glabris, interioribus lanceolato-oblongis ca. 1 cm. longis, intermediis ovati-lanceolatis brevioribus, extimis brevissimis parvis lanceolatis; corollis purpureis;

achaeniis brunneis graciliter cylindricis puberulis apice a cupula albida pappifera coronatis; pappi setis numerosis albis tenuissimis obscure barbellatis. —Tepic, Mexico, 5 January to 6 February, 1892, *Dr. Edward Palmer*, no. 2018 (type, in hb. Gray and hb. U. S. Nat. Mus.). A species readily recognized by its slender at first sight apparently naked stems and loose corymbose inflorescence. It is probably related to *P. Seemannii* Gray, which, however, has smaller heads and narrower green and granular involucreal scales, larger leaves, etc.

*Perezia platyptera*, n. sp., herbacea robusta 1.5 m. alta; caule glabro striato basibus foliorum valde decurrentium conspicue lateque alato; alis cuneiformibus ad insertionem folii ca. 1 cm. latis herbaceis reticulato-venosis deorsum gradatim decrescentibus saepissime denticulatis; foliis lanceolati-oblongis firmiusculis acute acuminatis ca. 12 cm. longis 3–4 cm. latis argute denticulatis utrinque reticulato-venosis; inflorescentia corymboso-paniculata, ramis folioso-bracteatis; bracteis lanceolatis ca. 3 cm. longis subintegris conspicue decurrentibus; capitulis ca. 15-floris 1.5 cm. longis; involucri campanulati squamis multiseriatim imbricatis linearibus attenuatis valde inaequalibus glanduloso-puberulis; corolla rosea ca. 1 cm. longa alte bilabiata; achaeniis subteretibus fusco-brunneis glandulosis; pappi setis numerosis laete albis ca. 7 mm. longis. — In clayey soil, Sierra Madre Mountains, Michoacan or Guerrero, Mexico, 22 January, 1899, alt. 1700 m., *E. Langlassé*, no. 773 (type, in hb. Gray). A species readily distinguishable by its broadly winged stems.

## VII. THE PURPLE-FLOWERED ANDROCERAE OF MEXICO AND THE SOUTHERN UNITED STATES.

BY HARLEY HARRIS BARTLETT.

The Mexican *Solanums* of the sub-genus *Androcera* divide naturally into two sections, one of which is characterized by purple or white flowers and the lack of stellate pubescence except on the leaves, the other by yellow flowers and extreme development of stellate pubescence on all parts of the plant. In the only apparent exception to this grouping, *Solanum macrosolum* Fernald, the flowers are tinged with purple, but the basal color, over which the purple is suffused, is yellow. The pubescence is that of the second section, to which the plant evidently belongs. All of the species of the first section, with the single exception of *S. Grayi* Rose, which has white flowers, are purple-flowered. Those in the Gray Herbarium may be determined by the following key:

Anthers of two kinds; four subequal and straight, the fifth longer and curved.

Corolla 1 cm. long or less.

Pubescence and spines of young fruiting calyx olive-green.

*S. heterodoxum*.

Pubescence and spines of young fruiting calyx golden-brown.

*S. heterodoxum* var. *novomexicanum*.

Corolla about 2 cm. long.

Pedicels stout, about as long as the fruiting calyx.

Spines on stem scattered, separated from one another by their own length. . . . . *S. citrullifolium*.

Stem densely bristly with slightly reflexed spines.

*S. citrullifolium* var. *setigerum*.

Pedicels slender, longer than fruiting calyx. . . . . *S. tenuipes*.

Anthers of three kinds, two short and straight, two longer and curved, forming a transition to the still longer and more curved fifth.

*S. Lumholtzianum*.

**SOLANUM HETERODOXUM** Duval. Caulis sparsim vel dense aculeatus, pilosus vel in parte inferiore subglaber, pilis apice glanduliferis. Folia petiolata sub-bipinnatifida, partibus 5-7 oppositis, utrinque aculeata, supra glabra vel pilis paucis simplicibus conspersa, subtus et pilis stellatis et simplicibus tecta. Pedunculus 3-5 cm. longus. Pedicelli 8-12 mm. longi crassiusculi aculeati glanduloso-pilosi. Flores

ca. 5 in racemi apice aggregati. Calyx pilosus aculeatus, sub fructus maturitatem 12-14 mm. longus, aculeis minoribus pilisque atro-olivaceis: segmenta gradatim acuta in apices exaculeatos persistentis 2 mm. longos desinentia. Corolla purpurea ca. 7 mm. longa profunde subaequaliter 5-partita, extus puberula, tubo 1.4 mm. longo. Stamina 4 aequalia, filamentis 1.35 mm. longis, antheris rectis 2.5 mm. longis; quintum filamentum 1.4 mm. longo, anthera arcuata 3 mm. longa. Stylus 5 mm. longus curvatus. Bacca globosa calyce oblecta, diametro ca. 9 mm.; seminibus nigris lateraliter compressis rugoso-foveatis, 2.5 mm. latis 3 mm. longis. — Mexico: Zacualco, Valley of Mexico, *Bourgeau*, no. 542. San Luis Potosi: *Parry & Palmer*, no. 634½; *Schaffner*, no. 696. Vera Cruz: Mt. Orizaba, *Seaton*, no. 468. — *Thurber*, no. 750, from Chihuahua is perhaps a variety of this species.

*S. heterodoxum* var. *novomexicanum*, n. var., a varietate typica differt partibus omnibus densius glanduloso-pubescentibus aculeatisque; calycis segmentis aetate ad apicem versus abrupte obtusatus, in lacinias angustas exaculeatas terminantibus, aculeis pilisque aureo-brunneis, nec, ut in varietate typica, olivaceis. Corolla 10 mm. longa, tubo 1.3 mm. longo. Staminum filamenta 2 mm. longa; antherae 4 rectae 3 mm. longae, quinta arcuata 5 mm. longa. — New Mexico, *Fendler*, no. 673 (type, in hb. Gray).

*Solanum citrullifolium* A. Br. This species does not appear to reach Mexico in its typical form. It is clearly distinct from the Mexican *S. heterodoxum*, with which it has long been considered identical. The original description (Ann. Sci. Nat. ser. 3, xii. 356) is entirely adequate. Specimens examined: Fayette, Iowa, 1894, *Fink* (introduced?); Texas, August, 1848, *Lindheimer*; Hort. Freiburg, 1849, *A. Braun* (cotype, grown from Lindheimer's Texan seed); Hort. Cantab., 1849, *Gray* (from Texan seed), and 1852 (from Texan or New Mexican seed).

*S. citrullifolium* var. *setigerum*, n. var. Caulis persetiger aculeis reflexis violaceo-tinctis. Folia sub-bipinnatifida longe petiolata aculeata (aculeis in petiolis venisque quam his in caule inter se distantioribus) utrinque scabriuscula, subtus exigue stellato-pilosa. Inflorescentia unilateralis elongata ca. 12-flora, pedunculo 4-6 cm. longo; pedicellis aetate 1 cm. longis glanduloso-pilosis. Calyx (apicibus segmentorum persistentibus angustis 5 mm. longis exceptis) aculeatus, aetate inter spiculos fere glaber, spiculis majoribus 13 mm. longis. Corolla purpurea irregularis 18 mm. longa, tubo 1.5 mm. longo; segmentis aliquanto incurvatis. Staminum filamenta 2.1 mm. longa; antherae 4 rectae 9 mm. longae, quinta arcuata 15 mm. longa. Stylus 17 mm. longus curvatus. Bacca globosa calyce oblecta ca.

8 mm. diametro. — Plains near Chihuahua, State of Chihuahua, 30 September, 1885, *Pringle*, no. 604 (type, in hb. Gray).

*Solanum tenuipes*, n. sp. Caulis glanduloso-hirsutus aculeatus. Folia bipinnatifida utrinque subscabra, subtus exigue stellato-pilosa, segmentis ultimis obtuse angulatis, petiolis nervisque aculeatis glandulosis. Racemus elongatus ca. 8-florus, pedicellis gracilibus aetate quam internodiis longioribus. Calycis pars inflata 10 mm. longa nervosa inter aculeos minute glanduloso-pilosa, aculeis ca. 10 magnis, paucis minoribus: laciniae inermes lineares persistentes 5 mm. longae. Corolla purpurea 21–23 mm. longa, tubo 2.1 mm. longo, lobis quam in *S. citrullifolio* angustioribus. Stamina 5 filamenta 2.7 mm. longa; antherae 4 aequilongae rectae 9 mm. longae, quinta arcuata 18 mm. longa. Bacca globosa calyce oblecta; seminibus lateraliter compressis 2.5 mm. latis 3 mm. longis atrobrunneis foveatis. — Coahuila: mountains 39 km. northeast of Monclova, September, 1880, *Palmer*, no. 939 (type, in hb. Gray); 180 km. west of Saltillo, June, 1880, *Palmer*, no. 940.

*Solanum Lumholtzianum*, n. sp., omnibus partibus aculeatum, caule subherbaceo, basi glabriusculo, superne viscoso-hirto. Folia quam in speciebus sectionis *Androcerae* reliquis parviora, sub-bipinnatifida utrinque minute viscoso-hirta, juventute subtus perexigüe stellato-pilosa; segmentis ultimis angustis, eis *Botrichii lanceolati* similibus. Inflorescentia 1–3-flora, pedunculo 7–11 mm. longo; pedicellis quam pedunculo crassioribus, longitudine e 3.5 mm. in inflorescentiis trifloris usque ad 11 mm. in inflorescentiis unifloris variantibus. Calyx maturus 17 mm. longus, 11 mm. latus, nervosus glabriusculus, aculeis longioribus (ca. 10) 12–15 mm. longis, brevioribus pernumeris. Corolla purpurea (?) profunde 5-lobata, tubo 1.7 mm. longo, 1.5 mm. diametro, faucibus ca. 2–2.5 mm. longis, segmentis 2 inferioribus 8 mm. longis, 3 superioribus 5 mm. longis. Stamina filamenta 1.7 mm. longa; antherae duae summae rectae 5 mm. longae, duae intermediae arcuatae 6.5 mm. longae, quinta (infima) arcuata 8 mm. longa. Stylus curvatus stamina superans. Bacca ovoidea, seminibus 2.5 mm. latis 3 mm. longis, configuratione formaeque cornui Ammonis similibus. — Collected at La Tinaja, Sonora, alt. 1100 m., 19 November, 1890, *C. V. Hartman*, no. 246, in Plants of the Lumholtz Expedition (type, in hb. Gray).



## VIII. DESCRIPTIONS OF MEXICAN PHANEROGAMS.

BY HARLEY HARRIS BARTLETT.

**Struthanthus Alni**, n. sp., lignosus 20-40 cm. altus omnibus partibus glaber; novellis viridibus glaucescentibus; ramis teretibus nodosis a cortice argyraceo-brunneo tectis. Folia subcoriacea lanceolata vel obovata 2-3.5 cm. longa 8-15 mm. lata, ad basin acutam in petiolum perbreve decurrentia, apice acuta vel obtusa saepe mucronulata. Inflorescentiae fere glomerulatae 3- vel 6-florae quam folia triplo breviores, plerumque in ramulis lateralibus terminales sed rarius axillariae; ramuli idem aut solitarii aut binis trinisve fasciculati. Pedunculi crassiusculi saepissime perbreves nunc fere obsoleti nunc usque ad 5 mm. longi. Pedicelli nulli. Bracteae bracteolaeque carnosae delapsu apicium truncatae, partem calycis inferiorem obtegentes et pedicellos brevis simulant. *Flores* ♂. Calyx ut in floribus ♀, sed brevior. Petala linearia 6 inaequalia 7-8 mm. longa. Stamina sex dimorpha, alterna brevita atque longiora. Staminum filamenta petalis ex toto adnata sed propter colorem formamque carinatum facilius videnda, longiorum antherae oblongae quam stylus longiores quam filamenta sua subduplo breviores, breviorum antherae usque ad aliarum baseis attingentes filamentis suis aequilongae. Ovarium quam in floribus ♀ multo brevius, stylo paululo tenuiore, stigmate rudimentario disciformi nec capitato. *Flores* ♀. Calyx urceolatus 2.2 mm. longus leviter 5-denticulatus. Petala 5 linearia, tria 5 mm. longa usque ad basin libera, dua aliis paulo breviora fere usque ad styli apicem connata. Staminodia omnia subaequilonga quam petala paulo breviora et eisdem connata, antheris rudimentariis liberis exceptis. Ovarii subcylindrici discum annuliforme; stylus 4 mm. longus; stigma capitatum. Fructus ignotus.—Parasitic on *Alnus jorullensis* var. *exigua* Fern., collected on the summit ridge of the Sierra de San Felipe, above the City of Oaxaca, State of Oaxaca, alt. 3000 m., *Pringle*, no. 10,244 (type, in hb. Gray). A peculiar species on account of the difference between the corollas of the staminate and pistillate flowers.

**Jacquinia Pringlei**, n. sp. Arbor parva ramulis junioribus novellisque exigue pubescentibus. Folia lanceolata 3.5-5.5 cm. longa 7-11 mm. lata perbreve petiolata, utrinque lepidoto-punctata, basi acuta, apice saepissime acuta et in mucronem rigidum producta. Inflores-

centia terminalis 5-11-flora, floribus in rhachi quam ramo crassiore subumbellatim dispositis. Pedicelli ca. 6 mm. longi. Sepala marginibus atrotincta integra. Fructus subglobosus 1.5-1.8 cm. longus, 1.4-1.6 mm. latus, apice abrupte mucronatus, seminibus 8 aut abortu paucioribus. Flores ignoti. — Type (in hb. Gray) collected at Iguala Cañon, State of Guerrero, alt. 750 m., 3 October, 1906, *Pringle*, no. 10,337.

MELINIA ANGUSTIFOLIA (Torr.) Gray and M. MEXICANA Brandege. In the Botany of the Mexican Boundary Survey Torrey published *Metastelma* (?) *angustifolia*, based upon Wright's no. 1677 from Santa Cruz, Sonora, commenting upon it as follows: "We refer this plant to *Metastelma* with much doubt, but there is no other genus to which it seems to be more allied." Gray transferred Torrey's species to *Melinia*, but with some misgivings as to its true affinity, as is evidenced by the following quotation from the Synoptical Flora: "*Melinia*, Decaisne. . . . Two or three extra-tropical S. American species, which have cordate leaves and slender peduncles; to which is appended the following, doubtfully, for its habit is that of *Metastelma*." When, in 1889, Watson described the genus *Pattalias*, the type species of which was *Pattalias Palmeri* Wats., he wrote: "A second species of this genus is *P. angustifolius*, a Sonora plant doubtfully referred by Dr. Torrey in the Mexican Boundary Report to *Metastelma*, and more recently by Dr. Gray to the extra-tropical South American genus *Melinia*. It is of similar habit [to *P. Palmeri*], but has petiolate leaves, a longer calyx, the crown at the base of the column, the anther-tips much more conspicuous, and the beak of the stigma narrow and columnar."

Another plant of the same dubious affinity was published in Zoe for August, 1905 (Vol. V, p. 216), as *Melinia mexicana* Brandege. Although habitally similar to *Metastelma angustifolia* Torr., it is clearly distinguished from that species by its shorter rostrum, longer and more fleshy corona-scales, and its recurved anther-membranes, which are much less constricted at the base than are those of *Metastelma angustifolia* Torr. The two species are congeneric, and since they cannot be placed with *Metastelma* nor with *Melinia* nor with *Pattalias*, a new genus is here characterized for their reception.

**BASISTELMA**, gen. nov. Calyx alte 5-lobus, lobis saepius angustis acutis. Corolla campanulata, lobis intus infra mediam saepius retrorsum pilosis, aestivatione leviter sed manifesto dextrorsum (externe visis) obtegentibus. Coronae squamae 5 carnulosae triangulo-subulatae vel lanceolatae, ad columnae basin corollae adnatis. Stamina prope corollae basin affixa, filamentis in columnam brevem connatis. Antherarum membranae rectae vel reflexae, haud inflexae. Pollinia in

quoque loculo solitaria ovoidea pendula. Stigma in rostrum cylindricum integrum quam antheras longius productum. Folliculi teretes acuminati tenues laeves. — Herbae perennes volubiles tenues, foliis oppositis parvis linearibus petiolatis; floribus parvis solitariis vel in cymata pauciflora aggregatis. Genus habitu et squamis coronae simplicibus *Metastelmatis* accedit, sed corollae lobis aestivatione obtegentibus facile distinguendum est. *Basistelma* squamis coronae simplicibus corollae adnatis et rostro integro nec bifido *Meliniae Pattaliadique*<sup>2</sup> dissimile est: a *Pattaliade* differt etiam lobis corollae reflexis nec rectis patentibusve, appendicibus antherarum magnis rectis vel interdum reflexis nec perparvis nec rostro adpressis. Species duae, *Basistelma angustifolium* (Torr.) n. comb. (*Metastelma angustifolia* Torr.) et *Basistelma mexicanum* (Brandegee) n. comb. (*Melinia mexicana* Brandegee), Sonorae Sinaloaeque incolae.

*Marsdenia trivirgulata*, n. sp., lignosa volubilis, ramis gracilibus juventute griseis aetate griseo-brunneis, in lineis longitudinalibus puberulis; lenticellis magnis conspicuis; internodiis foliis fere aequilongis. Folia opposita ovato-lanceolata, maxima 5 cm. longa 2 cm. lata, apice basique acuminata, supra viridia sparsim puberula, subtus, praecipue secus nervos, densius puberula, petiolis longitudine plerumque infra 10 mm. Cymata fere sessilia ca. 8-flora, pedicellis 2-3 mm. longis, basi bracteas ovatas minutas gerentibus. Calyx 2 mm. longus infra mediam 5-fidus, segmentis late ovatis obtusis, extus puberulus intus sub sinibus glandulis 5 papilliformibus praeditus. Corolla 6 mm. longa usque ad calycis apicem 5-fida sub sinibus callosa et appendicibus perbrevis truncatis emarginatis praedita, segmentis angustis oblongis plus minusve patentibus, lineis tribus rectis longitudinalibus purpureis maculisque concoloribus ornatis; coronae squamis 5 carnosae late ovatis basi connatis, margine liberis, supra sinus in auriculas callosas productis, infra antherarum loculos columnae brevi adnatis. Antherarum membranae terminales latae apice truncatae erosae mucronatae rostro adpressae. Pollinia erecta oblonga 0.4 mm. longa corpusculo virgiformi paululo breviora. Stigmatis rostrum conicum 1.8 mm. longum, apice leviter bidentatum. Folliculi ignoti. — Iguala Cañon, State of Guerrero, *Pringle*, no. 10,333 (type, in hb. Gray). In flower 13 October 1906. A species well marked by its small, thin leaves, attenuate at the base.

*Cordia igualensis*, n. sp., sectionis *Gerascanthi* arbor. Ramuli grisei ca. 4 mm. crassi, aetate glabri, juventate puberuli, cicatricibus foliorum

<sup>2</sup> Examination of the type material has shown that in *Pattalias Palmeri* the rostrum is distinctly bifid, and not entire, as stated in the original characterization of the genus.

paulo elevatis quam gemmis axillaribus bis terve latioribus. Folia laminis 6.5–8.5 cm. latis 15–18 cm. longis, apice basique acutis, supra glabris, subtus in nervis axillisque nervorum hispidulis; petiolis 2–2.5 cm. longis appresse hispidulis, supra canaliculatis. Inflorescentia paucibracteata, ramis 4–5 primariis subumbellatim insertis, perlongis, floris terminalis rhachin multo superantibus; ramulis ultimis atris dense glutinoso-puberulis; bracteis foliaceis lineari-lanceolatis. Calyx cylindricus 10-sulcatus minute puberulus 6.5 mm. longus leviter 5-dentatus seu potius 5-apiculatus. Corolla alba 2.5 cm. longa, tubo quam calyce vix longiore; faucibus 11 mm. longis; segmentis limbi 5 obtrapezoideis, 6 mm. longis, inter sinus 10 mm. latis, sub angulis rotundatis 11 mm. latis. Stamina 5 ad loborum baseis vix attingentia, tubo in summo adnata; filamentis deorsum ligulatis sursum teretibus; antheris 4 mm. longis. Pistillum 14 mm. longum staminibus multo brevius. — Iguala Cañon, State of Guerrero, alt. 760 m., 28 December, 1906, *Pringle*, no. 13,912 (type, in hb. Gray). The Mexican allies of *Cordia uguatensis* are *Cordia tinifolia* Willd. and *Cordia gerascanthoides* HBK. From the former it differs in its shorter, less pubescent, shallowly dentate calyx, and from the latter in its relatively short stamens, short broad corolla lobes and shallowly dentate calyx.

*Hedeoma albescentifolia*, n. sp. Herba perennis 1.5 dm. alta undique cano-hirta, caulibus e basi lignosa ramosa pernumeris gracilibus purpureo-tinctis saepissime ramosis. Internodia media 1.5–3 cm. longa. Foliorum laminae circumscriptione fere orbiculares basi obtusae vel rotundatae, apice cuspidato-acuminatae margine leniter revolutae, utrinque perpallide virides, saepe generis *Chenopodii* modo purpurascences, pubescentes, supra demum glabratae, exigue punctatae, dentibus 8–10 solito acutioribus altioribusque. Petioli ca. 2 mm. longi. Verticillastri 1–3-flori, axillares, post anthesin foliis aequilongi vel longiores, breviter pedunculati, supremi fere sessiles. Pedicelli 4–5 mm. longi. Floris terminalis bracteolae calycis basin paulo superantes, anguste cuneatae, triaristatae; aliae quam pedicelli dimidio breviores, lineari-subulatae. Calyx maturus 7 mm. longus prominule nervosus, antice leviter gibbosus, intus a pilorum annulo in faucibus posito obseptus; labri dentibus setaceis leviter arcuatis quam eis labioli divergentibus paulo longioribus. Corolla gracillima 15–18 mm. longa, extus minute puberula, intus nuda; tubo anguste cylindrico, sursum vix ampliato; labro ovato apice leviter-bilobato; labiolo trilobato, lobis lateralibus ovatis apice rotundis, medio obovato apice levissime obcordato et apiculato, quam lateralibus longiore. Stamina antica fertilia in tubo summo inserta, vix lobos labioli lateralis superantia; duo postica ad staminodia 0.5 mm. longa reducta, longe infra alia inserta. Stylus nudus

apice curvatus, sub lente leviter bifidus. — Santa Eulalia Mountains, Chihuahua, April, 1885, *Pringle*, no. 133 (type, in hb. Gray), distributed as *H. costata* Gray. Its nearest affinity is with *H. plicata* Torr. From this species it is at once distinguished by the color of the foliage and shape of the leaf-base. *Hedeoma costata* Gray, based upon Ghiesbreght's no. 815, was obscurely published in the Synoptical Flora in 1878 (Vol. II, Part II, p. 363), and thus has priority over Hemsley's *H. costata*, published in the Biologia Centrali-Americana. This is indeed fortunate, for although Hemsley's description was drawn up from *Ghiesbreght*, no. 815, the first specimen which he cited, *Palmer*, no. 1095, from Chihuahua, is clearly the more recently published *H. Pringlei* Briq. (including *H. permixta* Briq.). True *H. costata* is represented in the Gray Herbarium by only the type specimen from Chiapas, and is doubtless a species of strictly southern range. Specimens which have been distributed under the name are for the most part *H. plicata* Torr., a species which, to judge from the material at hand, is confined to the arid region of northern Mexico and the southwestern United States.

*Hedeoma quinquenervata*, n. sp. Herba perennis ca. 2 dm. alta, ubique cano-pubescent, caulibus e basi lignosa numerosis, sparsim ramosis vel simplicibus. Internodia media 3–4 cm. longa. Foliorum laminae usque ad 12 mm. latae, 18 mm. longae, basi obtusae, apice obtusiusculae vel acutae, margine leniter revolutae, subargute 10–12-denticulatae, exigue punctatae, utrinque permanentiter pubescentes, supra virides, subtus pallidiores, nervis alternatrinque 5(–6), ad denticulorum apices terminantibus, solum subtus prominulis. Petioli usque ad 5–6 mm. longi. Verticillastri plerumque 7-flori axillares in caule summo aggregati, folia bractiforma occultantes, pedunculis usque ad 2 mm. longis. Pedicelli 4–6 mm. longi. Bracteolae omnes uniformes pedicellis multo breviores lineares. Calyx maturus 9 mm. longus anguste cylindricus antice levissime gibbosus, intus a pilorum annulo obseptus, valde nervosus; labri dentibus aristiformibus leviter incurvatis quam eis labioli divergentibus vix longioribus. Corolla 18 mm. longa extus minute puberula, e basi tenui sursum gradatim ampliata, labro oblongo apice truncato emarginato; labiolo trilobo, lobis laterali-bus semiovatis, medio oblongo apice truncato. Stamina antica fertilia in tubo summo inserta vix labioli lobos superantia, duo postica 1 mm. longa, longe infra alia inserta, antheras capitatas nec polliniferas gerentia. Stylus nudus integer. — Sierra Madre, Monterey, State of Nuevo Leon, *Pringle*, no. 10,241 (type, in hb. Gray). A species most closely allied to *Hedeoma tenella* Hemsl., but differing in the nervation of the leaves, the more profuse and persistent pubescence, and the larger flowers.



**Viburnum cuneifolium**, n. sp. Frutex 3-5 m. altus novellis ferrugineis lepidotis. Lepides glandulos 8 brunneos radiantis gerentes. Ramuli modice crassi obscurissime angulati grisei glabrati; lenticellis brunneis; gemmis nudis; internodiis 2-6 cm. longis. Foliorum laminae juventate secus nervos perexigue lepidotae, aetate utrinque glabratae virides late cuneatae leviter denticulatae, in specimine florenti maximae 3.5 cm. longae 3.5 cm. latae, basi acutae, apice truncatae emarginatae; petioli 2-4 mm. longi anguste membranaceo-marginati, subtus persistenter ferrugineo-lepidoti, supra glabri atropunicei. Inflorescentiae umbelliformes diametro ca. 6 cm., floribus exceptis lepidotae, in ramulis lateralibus terminales, radiis 4 primariis 1-1.5 cm. longis. Bracteae bracteolaeque minutae glabrae obtusae scariosae saepe puniceo-tinctae. Pedicelli usque ad 3 mm. longi. Flores omnes conformes. Calycis tubus glaber subcylindricus 2 mm. longus; limbus expansus lobis brevibus obtusis. Corolla alba rotata 4 mm. longa lobis suborbicularibus. Stamina tubo inserta, corollae lobis aequilonga. Stylus perbrevis fere nullus. Stigma capitatum obscure trilobum. — Collected in the Sierra Madre above Monterey, Nuevo Leon, alt. 760 m., 27 March, 1906, *Pringle*, no. 10,234 (type, in hb. Gray). *Viburnum cuneifolium* is very readily distinguished from all the other Mexican species of the genus by its broadly cuneate emarginate leaves. It is allied to *Viburnum prunifolium* L.

**Parthenium Arctium**, n. sp., fruticosum, ramis juventate niveo-tomentosis aetate glabris ochraceis; internodiis quam foliis ca. 10-plo brevioribus. Folia deltoidea crenato-dentata usque ad 10 cm. lata 30 cm. longa, apice angustata acuta vel obtusa, basi cordata abrupte in petiolum usque ad 5 cm. longum decurrentia, supra viridia tenuiter arachnoideo-tomentosa, subtus niveo-tomentosa. Inflorescentia terminalis corymbosa a foliis longe superata omnibus partibus dense albo-tomentosa. Bracteae minutae nec deorsum foliis similes. Capitula densius aggregata diametro et altitudine ca. 3.5 mm. Involucri squamae 10 biseriatae exteriores oblongae apice obtusae interiores suborbiculares basi truncatae apice obtusissimae. Radii flores 5, tubo brevi; limbo oblongo apice dilatato truncato emarginato. Achenia (immatura) nigra compressa ovoidea 1.5 mm. longa epapposa ad margines singula palearum aristis florum duorum sterilium adnata. Disci flores ca. 18 in axillis palearum pubescentium cuneatarum positi. — Southwestern Chihuahua, August to November, 1885, *Palmer*, no. 123 (type, in hb. Gray). *P. Arctium*, so named because its leaves so closely resemble those of the common burdock, and *P. Stramonium* Greene constitute a well defined group in De Candolle's section *Partheniastrum*. From the other species of the section they differ in having the inflorescence much ex-

ceeded by the leaves, and in the lack of leaf-like bracts subtending the larger branches of the inflorescence. From one another they differ most markedly in the size and dentation of the leaves, but also in the character of the pubescence on the upper leaf-surface. In *P. Stramonium* it is velvety, in *P. Arctium* arachnoid-tomentose. In *P. Stramonium* the panicle is nodding, in *P. Arctium* it is upright. Both species occupy the same floral region and are the northwestern congeners of the southeastern *P. tomentosum* and its allies.

**Parthenium Lozanianum**, n. sp., fruticosum ramosum usque ad 2.5 m. altum, ramis ochraceis subsulcatis juventate exigue albo-tomentosis, aetate glabris; internodiis quam foliis saepe duplo brevioribus. Folia plerumque lyrato-partita 2-4.5 cm. lata 4-9 cm. longa, supra viridia exigue crispo-pubescentia, subtus molliter albido-tomentosa, parte terminali circumscriptione triangula vel cuneato-lanceolata ipsa fere generis *Aceris* modo obtuse dentata lobataque, partibus inferioribus parvis vel nullis basi in petiolum 3-6 mm. longum decurrentibus. Inflorescentia terminalis ex corymbis 5-6 sublaxis constans. Bractee deorsum foliis superioribus similes sursum gradatim minores et lanceolatae vel lineares. Inflorescentiae ramuli pedicellique puberulo-tomentosi graciles. Capitula diametro et altitudine ca. 5 mm. Involucri squamae 10 biseriatae exteriores late ovatae acutiusculae interiores suborbiculares basi truncatae apice obtusissimae. Radii flores 5, tubo brevi, limbo suborbiculari apice emarginato aut raro tridentato. Achenia nigra hirtella compressa cuneata 2.5 mm. longa ad margines singula palearum aristis florum duorum sterilium adnata. Pappi aristae 2 nigrae arcuato-ascendentes tubum superantes albo-pubescentes. Disci flores ca. 26 in axillis palearum cuneatarum pubescentium positi. — Nuevo Leon, State of Nuevo Leon, alt. 300 m., *Lozano*, no. 10,247 (type, in hb. Gray). A member of De Candolle's section *Partheniachaeta* and very closely allied to *P. incanum* HBK., from which it may be distinguished by its incurved, ascending pappus-awns and green upper leaf surface. In *P. incanum* the pappus-awns are divergent or often recurved, and the leaves are whitened above.

**PEREZIA ADNATA** Gray. This species has long been considered identical with *Perezia Alamani* Hemsl. Specimens which have accumulated in recent years afford evidence that not only may *Perezia adnata* and *P. Alamani* be distinguished, but also a third plant which is here described as a variety of the former. The following brief descriptions contrast the diagnostic characters of the three plants.

**PEREZIA ALAMANI** (DC.) Hemsl. involucri bracteis ca. 14 paene glabris submembranaceis anguste lanceolatis viridibus apice purpureo-tinctis basi vix callosis; pappi setulis ca. 49; labro corollae interiore

extus papilloso-pubescenti; foliis maximis 5 cm. longis. — Specimens examined: "Mexico," Alaman; "Valle de Toluca pr. Tenancingo," State of Mexico, September, 1874, and 1 October, 1876, *Schaffner*; Guanajuato, State of Guanajuato, *Dugès*; rocky hills, Cuyamaloya Station, alt. 2300 m., Hidalgo, *Pringle*, no. 12,070.

*PEREZIA ADNATA* Gray involucri bracteis ca. 28 viscido-pubescentibus coriaceis anguste lanceolatis ochraceis, basi insigniter callosis; pappi setulis ca. 84; corolla glabra; floribus ca. 14; foliis maximis 8-9 cm. longis. Morelia, Michoacan, *Ghiesbreght*, no. 378 (type).

*Perezia adnata* var. *oolēpis*, n. var., involucri bracteis ca. 21 viscido-pubescentibus coriaceis ochraceis apice viridiusculis vel purpureo-tinctis, basi insigniter callosis, exterioribus ovatis, interioribus lanceolatis; pappi setulis ca. 63; corolla glabra; floribus ca. 11; foliis maximis 10-12 cm. longis. — Rocky hills at an altitude of 2500 m., Tultenango, State of Mexico, *Pringle*, nos. 3244 & 9945.



